THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY IN HONG KONG:

A CASE STUDY OF A TERTIARY EDUCATION INSTITUTION

by

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ABSTRACT

The aim of this study is to examine the key factors which will retard the development of educational technology in Hong Kong and to find out why its development is vulnerable to crisis situations.

The development of the Educational Technology Centre in the City Polytechnic of Hong Kong is used as a case for this study.

A number of frameworks and models which have certain relevance to the circumstances are presented. The discussions are centred round the organizational life cycles model, the standards of the educational technology programme, three different schooling models, the stages of change in the education system, the barriers to technology adoption, and also predictions on the problems and possibilities for the development of educational technology.

The research methodology is basically a combination of personal observations, in-depth interviews, documentation and survey data analysis and comparison study. The study finds that the quality of services and personnel, the users' acceptability, and the management's perception are the three major factors which affect the development of educational technology in Hong Kong.

The study finally concludes that if educational technology remains in a

supplemental, non-essential position in teaching activities, it is bound to be victimized whenever crisis arises, especially when the management's perception is reversing from a positive to a negative direction and when there is a budgetary constraint.

CONTENTS

I INTRODUCTION

1.1 Defining the Problem Area

"Educational technology is just a victim of circumstances, especially at crisis situations"

The above alarming statement was made by Jenny Johnson[1], a world-class educational technologist and professor at the University of Maryland, when she was asked by the author of this research in a seminar held here in Hong Kong[2] to conclude her gut feeling about the development of educational technology as a whole.

Since the remark she made is more in a general sense than is specific to any particular country or region, it is highly possible that such a comment is applicable to what is actually happening here in Hong Kong as far as the development of education technology is concerned.

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1 Professor Johnson has been very active in teaching and consultancy work in the field of educational technology. She has been travelling quite extensively around the world as visiting scholar and instructional design specialist.

2 The seminar was jointly organized by the Hong Kong Association for Educational Communications and Technology and The Centre for Educational Development of The Hong Kong Baptist College on March 25, 1992. The seminar title was "Role of the Teacher as Instructional Developer (Subject Expert)"

The author, being a full-time media specialist in the tertiary education field and also a student of communication studies, was shocked upon hearing this striking remark. A series of questions then came to the author's mind:-

- **Is the development of education technology really so vulnerable?**
- **If so, why?** and
- **What, if anything, can be done to neutralize the effect of haphazard circumstances?**

The factors which could hinder the development of educational technology, the problems and barriers which might be in the way are certainly something worth the attention of people who care for and treasure a good and healthy education system for our community. Provided we can detect and identify the problems, then we can be in a better position to formulate solutions to dissipate the adverse factors looming over the development of educational technology. As a western proverb says: "An ounce of prevention is worth a pound of cure".

1.2 Aims of the Study

The aims of this study are:

(1) **to examine the key factors which affect the development of educational technology in Hong Kong;**

(2) **to find out which is the most influential factor which hinders the development of educational technology**; and

(3) **to find out the reason why the development of educational technology is often in a vulnerable position under crisis situation.**

The development of the Educational Technology Centre (ETC) of the City Polytechnic of Hong Kong (CPHK) is used as a case for the study.

It is hoped that through the research findings of this study, the key factors and main hindrances to the development of educational technology will be identified and ways to overcome such hindrances will be discussed. It is also hoped that the main reason which puts educational technology in a vulnerable position may be explored and preventive measures against it may be formulated.

It should be noted that the validity of the findings of this study should mainly be restricted to its scope, i.e. educational technology development within CPHK. However, some of the findings and circumstantial

evidence may also to be applicable to other related or similar situations among other tertiary institutions.

1.3 Significance of the Study

The application of educational technology (ET), sometimes known as instructional technology (IT), is getting more and more popular and trendy in view of the fact that giving quality training and education to highly motivated students by means of effective and suitable technologies is the most certain way to increase the competitiveness of the nation over its rival countries on all fronts in the international market.

The "Cone of Experience" model designed by Edgar Dale (1966) suggests that abstract concepts, such as languages, symbols, pictures, sound recordings, etc., need to be perceived and vicariously experienced by ways of active thinking together with rational reasoning and imagination. Audio-visual materials are something which can be used to compensate for the lack of direct experience which, in most of the cases, cannot be made possible in the classroom teaching environment.

The research data collected from Wilkson (1971) supported Dale's thinking. It was found that, in the course of a learning process, a normal person learns 83% through "viewing", 11% through "listening", 3.5% through "smelling", 1.5% through "touching", and another 1% through "tasting". These figures signify the importance of the use of audio-visual media in the teaching and learning process.

This explains why in the modern teaching environment, more and more audio, video, and presentation technologies have been brought into the scene -- the main reason is to enhance learning effectiveness. This is also the reason why educational technology is becoming more and more important in today's education and training practices.

Of course, educational technology does not only refer to the "hardware" equipment as can be seen by visitors who come to see today's modern classroom facilities. The "software" side of it also exists and is as important, if not more so, as its "hardware" side. This "software" nature will be presented and discussed later in this study. Both the "hardware" and "software" sides of educational technology can create significant impact on the teaching and learning process, and it is this integrated perspective of educational technology which helps build a more significant role for it to play. The potential importance of educational technology is as a matter of fact getting more and more recognition from today's teaching professionals and communication researchers.

Jerrold Kemp, a renowned educational technologist and Professor Emerities of San Jose State University, is excited about what is going to challenge the field of education. He says:

> "After years of analyzing how poorly our schools serve their students and our society, we are seeing major changes taking place on many fronts. Two particular undertakings are the *America 2000* strategy

> proposed by President Bush and the New American School Development Corporation's *Education 2000* project, now inviting "new vision" proposals for students to meet world class subject standards. Such major transformations are necessary if we are to help our schools shift their beliefs and practices from the Industrial Period to the emerging Information Era .... The time seems ripe to implement the instructional design process in education .... The result can be satisfactory, innovative instructional programs that are crucial for effective and economical teaching and learning."[3]

In fact, there have been numerous researches done on ET and IT development in the USA and other developed countries sharing more or less the same visions as those of Professor Kemp.

At a special opening ceremony held in March 1992 which commemorated the 20th Anniversary of the Hong Kong Polytechnic, Sir Sze-yuen Chung[4] made his conclusive comments about the stakes in Hong Kong's future:

> " It would be a short-sighted policy if Hong Kong put a brake on further development of higher technological and management education .... And it would be an equally short-sighted vision if the Territory continued to neglect research and development."
>
> (HKP, 1992, p.2)

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3 These comments are excerpts from a longer document written in February, 1992, and presented to members of the US Congress for Association for Educational Communications anf Technology's "Legislative Blitz" held during the National Convention in Washington, DC.

4 An industrialist as well as and an important political figure in Hong Kong, Sir S Y Chung has spearheaded the development of Hong Kong's tertiary education in the past twenty years. He was the Founding Council Chairman of the Hong Kong Polytechnic, and of the City Polytechnic of Hong Kong, and is currently the Founding Council Chairman of the Hong Kong University of Science and Technology.

However, when the author searched through the library collections on the development of ET in Hong Kong, he was rather disappointed to find that very few research efforts[5] had been directed towards the direction pointed out by Professor Kemp and Sir S Y, especially with regard to the strategic planning, the developmental problems and the overall coordination of the development of educational technology in the local context.

This research study, because of its case study nature, may seem more descriptive and qualitative than a scientific research. However, it is definitely worthwhile because pioneering and exploratory work on the overall developmental problem of ET is badly needed in Hong Kong. It is hoped that such efforts may arouse the interest of other communication researchers and educators, so that they may pay due attention to this seemingly neglected area of communication studies. Then, more research may hopefully be carried out, and the awareness of the potential and importance of ET may be enhanced thereafter.

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5 There are research articles published by the faculty members and students of The Chinese University of Hong Kong and by the professional staff members of the Educational Technology Unit of the Hong Kong Polytechnic. But most of these articles are targeted at a very narrow and specific area of interest in the ET field or are discussions and analyses of the implementation aspects of certain IT process.

II THE BACKGROUND STUDY OF EDUCATIONAL TECHNOLOGY

2.1 Terms and Definitions

Before going into the core of the study, I think it is essential to gain a nutshell understanding of some terms and definitions which are of crucial importance to the theme of this study. Of course, different scholars will have different perceptions of certain concepts in relation to their own personal backgrounds and disciplines. The definitions presented here are just the ones believed to be the most widely accepted and representative.

What Is Education?

John Dewey defined education as "the enterprise of supplying the conditions which ensure growth, or adequacy of life, irrespective of age" (Dewey, 1916, p.18).

P.G. Smith further differentiated the differences between education and training as "where the inculcation of skills, habits, attitudes, or beliefs is intended...the process... is called training. In contrast... to increase the student's ability and inclination to employ critical, independent, and

creative judgement (is called education)" (Smith, 1965, p.23).

What Is Technology?

Y.R. Simon maintained that "Technology is a rational discipline designed to assure the mastery of man over physical nature, through the application of scientifically determined laws" (Simon, 1983, p.173).

But J. McDermott argued that "Technology, in its concrete, empirical meaning, refers fundamentally to systems rationalized control over large groups of men, events, and machines by small groups of technically skilled men operating through an organized hierarchy" (McDermott, 1981, p. 142).

And as early as thirty years ago, James Finn concluded that "in addition to machinery, technology includes processes, systems, management and control mechanisms both human and non-human, and .... a way of looking at the problems as to their interest and difficulty, the feasibility of technical solutions, and the economic values - broadly considered - of those solutions" (Finn, 1960, p.10).

Why Is There Technology in Education?

Engler viewed technology as being inextricably related to education. He commented, "If we view the ecology of education as the web of relationships between and among learners, teachers, and the environment in which they operate, then it becomes apparent that these relationships are largely defined by the prevailing technology of instruction" (Engler, 1972, p. 62).

The Carnegie Commission concluded that: "Technology should be the servant and not the master of instruction. It should not be adopted merely because it exists, or because an institution fears that it will be left behind the parade of progress without it. We also believe that sophisticated technology is not to be equated with saturation. In some courses, the use of technology may be appropriate for a few hours in an entire term. In a few, technology may be constructively used for two-thirds of the hours allotted for a term of instruction; in a very few, it may take over the entire process" (Carnegie Commission on Higher Education, 1972, p 11).

What Is Educational Technology (ET)?

By providing a rather comprehensive definition, Collier and his group of

scholars suggested that educational technology "involves the applications of systems, techniques, and aids to improve the process of human learning.... It is characterized by four features in particular:

(1) the definition of objectives to be achieved by the learner;

(2) the application of principles of learning to the analysis and structuring of the subject matter to be learned;

(3) the selection and use of appropriate media for presenting material; and

(4) the use of the appropriate methods of assessing student performance to evaluate the effectiveness of courses and materials" (Collier et al., 1971, p. 16).

On the other hand, Cleary and his followers were content with the simple explanation that educational technology "is concerned with the overall methodology and set of techniques employed in the application of instructional principles" (Cleary et al., 1976).

The National Academy of Engineering's Instructional Technology Committee on Education treated educational technology as the "body of knowledge resulting from the application of the science of teaching and learning to the real world of the classroom, together with the tools and methodologies developed to assist in these applications" (Dieuzeide, 1971, p. 1).

The corporate view of the practising media specialists of Association for Educational Communications and Technology (AECT) is that it is "a complex, integrated process involving people, procedures, ideas, devices and organization, for analyzing problems, and devising, implementing, evaluating and managing solutions to those problems, involved in all aspects of human learning" (AECT Task Force, 1977, p. 164).

What Is Instructional Technology (IT)?

From the school administrators' point of view, instructional technology is "an effort with or without machines, available or utilized, to manipulate the environment of individuals in the hope of generating a change in behaviour or other learning outcome" (Knezevich & Eye, 1970, p. 16).

David Engler further elaborated the term into two perspectives: "First, and most commonly, it is defined as hardware - television, motion pictures, audiotapes and discs, textbooks, blackboard, and so on; essentially these are the implements and media of communication. Second, and more significantly, it is defined as a process by means of which we apply the research findings of the behavioural sciences to the problems of instruction." (Engler, 1972, p. 59).

A summary by the Commission on Instructional Technology suggests and recommends that the purpose of instructional technology is "to make education more productive and more individual, to give instruction a more scientific base, and to make instruction more powerful, learning more immediate, and access more equal" (Tickton, 1971, p.32).

The Difference Between ET and IT

Cass Gentry pinpoints the fine difference between these two mostly confused terms in the education field as "Instructional technology can be viewed as a subset of a larger technology, that is educational technology. To illustrate, educational technology might be a combination of instructional, learning, developmental, and managerial technologies. In turn, educational technology could be combined with others to form an even larger or higher order technology." (Gentry, 1991, p.8).

The Overall Role of ET

After considering the various views and definitions presented above, we can conceptualize the overall role of educational technology as a bridge to close the gap between the education domain and the technology domain (as shown in FIGURE 1). By the application of modern audio, video and graphic presentations, computer and instructional design technologies, it is hoped that the effectiveness and efficiency of learning and teaching can be enhanced. The implemention and operational aspects of the application of modern technologies are, of course, the core of the development of educational technology, and they will be further examined and discussed in the literature review section.

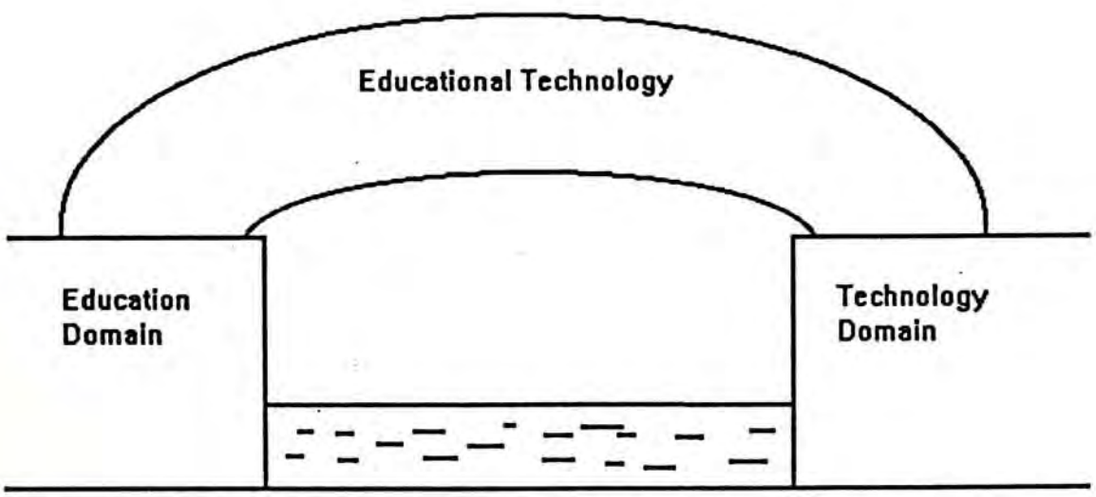

Figure 1: Educational Technology as a Bridge Between the Domains of Education and Technology

2.2 Similar Works with Different Names

As mentioned earlier, different people preceive the nature, functions and roles of educational technology differently because of their different knowledge and application backgrounds. It would not be surprising to find that a similar set of works has been given many different names in the case of ET. There have been different names and terms given to the special education unit which renders services and support to its users in the form of a consolidated educational technology programme.

The most common names being adopted are:-

Audio-Visual Educational Centre

Audio-Visual Resources Centre

Educational Media Centre

Educational Materials Centre

Educational Technology Centre

Educational Development Centre

Instructional Media Centre

Instructional Resources Centre

Instructional Technology Centre

Instructional Development Centre

Instructional Improvement Centre

Learning Resources Centre

Obviously, the list does not mean to be exhaustive. The use of a certain name simply indicates the special emphasis that each individual institution puts upon its educational technology programme; it also signifies the specific functional role that educational technology is going to play in terms of its services and the support provided to its users within its organizational context.

2.3 The Changing Roles of Educational Technology

When looking from a historical perspective at the development of educational technology, one sees that people perceived many changing roles for educational technology, its functions and its importance in the field of instructional communications.

(1) Audio-visual Training Aids

Back in the 30's and 40's, people seemed to regard ET as merely various pieces of audio-visual (AV) equipment, such as bulky overhead projector and odd-looking movie camera on creaking heavy trolley, being moved from one room to the next. It was not until World War II that ET received its proper attention and acceptance.

The War created a demand for technology-based **audio-visual training aids** which would enhance the effectiveness of coaching and training to military personnel. The innovative use of the AV media by some practitioners[1] proved that the training aids were highly effective for military preparation as well as civilian training purposes during this period.

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1 Edgar Dale, Charles Hoban, and James Finn and several others, had won their reputations as professional trainers and leaders of the training field during this period.

(2) From Training Aids to Teaching Aids

Later on after the War, when the technology was transferred to the classroom environment and when teachers were approached by AV specialists on the use of AV equipment and materials, these resources were mostly thought of as enrichments or, at most, supplements to classroom teaching. They were considered useful but not essential; they were add-ons to normal teaching situations -- the so called **teaching aids**.

(3) Technology for Self-paced Learning

In the 60's, new ways for using AV media in instruction were introduced. After some considerable amount of research and planning efforts, Postlethwait (1969) invented his "audio-tutorial method" for the teaching of college botany. Conventional classroom face-to-face lectures were partly substituted by take-home listening lessons of specially designed and tailor-made audio recording programmes with follow-up discussion sessions held in class afterwards. This method was later applied to many other subjects and disciplines in colleges and universities and was also considered effective and useful. In fact, this new method was so well accepted that it set the stage for the development of **self-paced learning technology**[2].

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2 Learning laboratories were designed and built with different types of AV materials produced and arranged there. Audiotape recordings, study carrels, 8mm film strips, and other printed materials were so organized that individual students or student groups could suit their own style, at their own pace, and find their own time for learning enhancement outside the conventional classroom environment.

The successful introduction of this self-paced learning concept prompted many other teaching methods to develop alone the same line, and one of them was the "learning activity packages" (LAPs). These packages incorporated various media resources, prints or non-prints, sight and sound, hand-on experiments and suggestions for workshop. This integrated approach was considered a step forward from the "audio-tutorial method" and was enthusiastically welcomed by most users.

It was also during this period that the principles of behavioural psychology were applied to learning and teaching. The aggregate efforts spent in this direction resulted in "programmed instruction" and "teaching machines" -- a machine-based learning environment which can be considered as the prototype of today's computer-assisted instruction (CAI) package.

With these new developments in the 60's, technology had obviously become the change agent in classroom teaching situations. Teaching professionals became aware of the many possible ways to use media that could allow the change of a teacher-oriented environment to a student-oriented one. And more importantly, students were given responsibilities for their own learning.

(4) From Technology Approach to Process Approach

In the late 1960s, a National Commission on Instructional Technology was established in USA and was given the task to explore the emerging roles of technology for learning. The Commission, after a long and extensive testimony vetting process, issued a report and gave a new definition to instructional technology (Commission on Instructional Technology, 1970):

> "Instructional technology can be defined in two ways. In its more familar sense, it means the media born of the communications revolution which can be used for instructional purposes alongside the teacher, textbook, and blackboard. The second and less familiar definition of instructional technology goes beyond any particular medium or device. In this sense, instructional technology is a systematic way of designing, carrying out, and evaluating the **total process** of learning and teaching in terms of specific objectives based on research in human learning and communication, and employing a combination of human and non-human resources to bring about more effective instruction."

This **process approach** maintained by the Commission called for a shift of emphasis and a major change of role of instructional technology. The educational technologists were therefore required to involve themselves a lot more in systematic planning for the process and procedures of instructional design (ID) programmes -- they started to find themselves participating in budget and resource allocation proposals for equipment procurement, recommending the use and selection of the media, and offering advice and suggestion for action plans which would affect curriculum design and teaching effectiveness.

This "process approach" has nowadays, become a standard for the set-up of a comprehensive and integrated programme of educational technology in most of the tertiary institutions established in recent years in North America.

2.4 The Worldwide Diffusion

The ever-growing interest in ET and IT development in the United States resulted in a trend to be followed by most of the Western countries, including Canada, UK, and Australia, and was further passed on to some developing countries as evidenced by an observation made by Romiszowki (Anglin, 1991, p.245):

> "The truth is that educational technology, though born and bred in the United States, is now a well-established international phenomenon, flourishing in all parts of the world. Indeed, it is playing a more significant role in developing or changing educational practices in many countries throughout the world than in the United States itself."

According to the *1989 International Yearbook of Education and Training Technology* (AETT, 1989), the total number of instructional technology centres outside the United States was 936, three times the number of those within the States (see Table 1). This figure alone shows how quickly educational technology has diffused into various cultures and how willingly people are prepared to accept it regardless of their national and cultural differences.

2.5 Educational Technology in Hong Kong

As the British colonial government is planning for her last treat for the people of Hong Kong, the Colony is experiencing a great wave of changes: from the Big March on 4th June to the "B" shares craze triggered by the Shenzhen stock market, from the record breaking horsing racing bets to the Hang Seng Index's all-time-high, from the thousands of billion dollars worth of the New Airport Project to the $5000/ft^2 property market boom.

Hong Kong people and the Government alike are trying their best to hold fast to their leaking fishing boat in the hope of getting a bountiful catch before they are hit by the great tidal waves caused by the 1997 sovereignty handover.

During this run-up to 1997, it came as a surprise that the Hong Kong Government decided to change its long upheld "elite-class education" policy into one based on a "mass education" philosophy. The Governor made it clear in his annual address in 1989 that Hong Kong is going to increase its first-year degree course intake from 1990's 7,500 to 15,000 by 1995, which means Hong Kong is going to double its university intakes in five years.[3]

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3 This figure will represent 18% of the total projected matriculation population by the year 1995.

The last Governor of Hong Kong, Sir David Wilson, stressed the Hong Kong Government's commitment to education, especially at tertiary level:

> "The new Hong Kong University of Science and Technology is an instituation in which Hong Kong can take pride. It is a demonstration of our commitment to tertiary education and to the value Hong Kong places on science and technology as a powerful contribution to economic growth."
>
> (HKUST, 1991.)

Obviously, the Hong Kong Government thinks and believes that it is the quality of people which matters most when the future prosperity and economic growth of the territory is at stake; and the only sure way of enhancing the people's quality is by providing them with the best opportunity to uplift their educational standard, especially in the understanding and application of science and technology through high-quality tertiary education.[4] By the same logic, the number of university places made available for qualified high school leavers can be viewed as an index of the accountability and foresight of the Government of Hong Kong.

Regardless of whether this kind of logical reasoning is sound or not, the increase in university enrolment will certainly be welcomed by high school leavers and their parents. This proposed move will definitively lighten their burden by reducing the intense competition for local university places and will save them a lot of money in terms of the

4 Express Daily, 18 Apr 1992

expenses involved in getting overseas education. So, more or less, this proposal has been accepted by Hong Kong people as a blessing to society. But of course the Hong Kong Government must be prepared to and capable of providing adequate resources to support such a visionary target.

Quite unfortunately, the Hong Kong Government does not seem to be willing to pay for the price. According to the most recent figures, the recurrent budget for this coming triennium (1992-1995) for most tertiary institutions is not anywhere near to the proportional increase required for their planned expansion. The budget increase is so minimal that there will only be an increase of 7.5% after taking the inflation rate into consideration.[5] What is more, after a heated social debate over the the allocation of resources for the development of our education system, the Hong Kong Government is going to cut its original approved recurrent budget for the UPGC institutions[6] by 300 million at first and possibly up to 600 million at the end[7] for the balanced development of other educational sectors.

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5 Sing Tao Daily, 2 March 1992

6 The group of higher education institutions in Hong Kong which offer recognized degree courses to their students and are funded by the Government with their start-up expenses and recurrent budget from the University and Polytechnic Grant Committee(UPGC). UPGC is the executive arm of the Hong Kong Government to take care of the funding of higher education development in Hong Kong.

7 The 300 million clawback has been widely publicized in late 1991 and early 1992, but the possible clawback amounted to 600 million has been brought to the attention of some of the most senior university administrators among the UPGC institutions just recently -- in May 1992.

It is generally believed that most of the Government's financial resources will be channelled to the building of the New Airport. Therefore, all other sectors of our society suffer, including our education system.

In view of the dilemma that on one hand Hong Kong's tertiary education is to be vastly expanded and on the other hand it has to be expanded under a strict budget constraint, one of the possible ways of achieving the expansion is by improving the efficiency and effectiveness of the quality of teaching through the use of technologies, and this is why the development of educational technology is so important to Hong Kong in future.

Though there has never been any official statistics available concerning the number of ET or IT programmes in Hong Kong, it does not mean that ET or IT has never existed in Hong Kong. There are commercial firms which are deeply involved in human resources training and communicating processes and put ET in practice. Big and well established companies, such as the Hong Kong School of Motoring, the Hong Kong Bank, the Hong Kong International Terminal Company, and the Hong Kong Aircraft Engineering Company, are employing a member of professional staff who are knowledgeable about ET and are applying

the ET processes to their routine practices.[8]

Back to the more relevant context at the tertiary level, among the seven members of the UPGC group, all of them except Lingnan College[9] have some form of a set-up which provides services in educational technology:

- Baptist College
  - Centre for Educational Development (CED);
- Chinese University of Hong Kong
  - University Instructional Media Services (UIMS)[10];
- City Polytechnic of Hong Kong
  - Educational Technology Centre (ETC);
- Hong Kong Polytechnic
  - Educational Technology Unit (ETU);
- Hong Kong University
  - Centre for Media Services (CMS);
- Hong Kong University of Science and Technology
  - Educational Technology Centre (ETC).

From the above listing, there is reason to believe that educational technology is not a total stranger to Hong Kong citizens, especially to those who are associated with teaching and education at the tertiary level.

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8 When the author was a committee member of the defunct Hong Kong Interactive Technology Group, it was noted that over 100 representatives from various sectors of the community are engaged in the implementation of ET to various extents.

9 Up until 1991-1992 academic year, Lingnan College has only a "Research, Staff Development and Teaching Innovation Centre"; it plans to have an "Educational Technology Centre" in 1992-1993 academic year.

10 The UIMS of The Chinese University of Hong Kong was re-organized during 1991-1992 academic year. The capability of its media productions becomes a section under the management of the University Press, and UIMS is left with only a small team of technical staff to provide basic AV equipment support services.

Even though the development of educational technology is not a brand new concept to Hong Kong's tertiary education institutions, it is, however, a relatively new idea in providing an integrated service programme to academic communities in Hong Kong, like the services provided by a library or a computer centre. To a certain extent, the "hardware" side of any ET services has long been recognized and accepted; it is the "software" side of the ET services which has generated a bit of ambiguity and created some uncertainty of its usefulness on the part of the users.

As mentioned earlier, the "process approach" (Commission on Instructional Technology, 1970) of ET services had in fact not been actively promoted until the 70's in the U.S., and the earliest adoption of the name "Educational Technology Unit" did not appeared in Hong Kong until about sixteen years ago, when the Hong Kong Polytechnic pulled its AV services, graphic design services and curriculum design services together and formed an integral service programme for its users. Furthermore, among all the seven UPGC institutions, the Hong Kong University of Science and Technology and Lingnan College have just started or are about to start their ET services, therefore, it is justified to say that "educational technology" is a relatively new form of technology which requires careful planning and strategic management skill for its development. And in the course of its development, this new form of technology is unavoidably exposed to resistances of various magnitude

from those who hold a more traditional view about the role of ET. Barriers are going to be met and challenges to be tackled before ET can take root and flourish in Hong Kong's tertiary education setting.

III THE CRISES AND VICTIM IN TERTIARY EDUCATION

3.1 The Scope of Crisis and Victim

Regarding Jenny Johnson's comment, it is necessary to define the terms "victim" and "crisis situation" in a more specific manner so that these general terms will make better sense and bear greater relevance to this study.

"Victim" usually refers to "a person subjected to oppression, deprivation, or suffering."[1] Its meaning is also extended to "a person, animal, or thing that suffers pain, death, harm, destruction, etc., as a result of other people's actions, or of illness, bad luck, etc."[2] To make it simple, the word "victim" implies "something unfairly happens to somebody with undue reason". The act of "victimization" is action "causing someone unfairly to receive punishment or blame which should really be shared by many others."[3] In an organizational setting, this "someone" can be a member of staff, a group of staff, or even a whole department.

In the context of this study, we use the word "victim" to refer "a department which suffers from unfair and adverse conditions caused by the actions taken by the top management in a crisis situation."

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1 Webster's Third New International Dictionary, 1986, p.2550

2 Longman Dictionary of Contemporary English, 1987, p.1223

3 Ibid

The dictionary definitions for "crisis" is probably one of the followings: "crucial moment, "decisive time," "turning point," or "situation that has reached a critical phase."

"Crisis" is a very common term in behavioural sciences, social studies and management studies. Within a social system, it is often viewed as a collective situation in which many members fail to receive some expected conditions and is under certain degrees of stress. "Crisis" is commonly perceived to have strong connection with disaster, panic, distress, disturbance, violence, or potential damage (Robinson, 1968).

But, in fact, as the Chinese term it, *wei-ji* -- "crisis" -- is a combination of two situations: "danger" and "opportunity." It is a "turning point" that distinguishes the consequence of an event either "with the distinct possibility of a highly undesirable outcome or with the distinct possibility of a highly desirable and extremely positive outcome" (Fink, 1986).

Wiener and Kahn (1962) portrait some important features of a crisis situation:

(1) It is a turning point of an impending sequence of actions and events.
(2) It reduces control over routine practices and events.
(3) It creates uncertainties.
(4) It raises tension and stress among paticipants.

3.2 The Crises in Tertiary Education

When talking about problems and crises in tertiary education, Gerald Hayward[1] ironically suggests that since "the future promises to be more, not less, complex" and "leaders (of universities) will have less control over their own destinies, and the role played by external forces affecting their leadership capabilities promises to be even greater," the top school leaders may well have to "major in ambiguity and minor in conflict resolution" (Haywood, 1986, p.25).

Charles Ping[2] claims that the most obvious crisis situations happened to government funded universities in USA in the 70's & 80's were:

(1) a sharp drop in enrolment

(2) a budget crisis and

(3) the possibility of reduction in state support.

(Ping, 1986, pp9-16)

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1 Gerald Hayward has been Chancellor of the California Community Colleges, Distinguished Senior Visiting Lecturer at the University of California, Berkeley, and Director of Project PACE (Policy Analysis for California Education, Sacramento region)

2 Charles Ping was President of Ohio University in the 80's.

Douglas Moore[3] maintains that crises common to all higher education institutions, private and public universities alike, are:

(1) the shrinking pool of high school graduates;

(2) the eroding position of education within the nation's priorities;

(3) decreasing federal financial aid for students;

(4) continuing inflation of costs, and growing shortages of qualified faculty.

(Moore, 1986, pp17-24)

Hoverland, McInturff and Rohum, Jr.[4] (1986) share the same view that the most critical crises which hit the universities in the USA in the 80's were:

(1) declining enrolments;

(2) changing demographics;

(3) uncertain enconomic conditions; and

(4) fluctuation's in the political environment.

---

3 Douglas Moore has been president of the University of Redlands and also president of Mankato State University in Merinesota.

4 Hoverland, McInturff and Rohm Jr. are all professors in the School of Business and Public Administration at California State University, San Bernardino.

It seems from the above that, with regard to crises at tertiary education level, budgetary considerations bulk large in the observations and experience of most USA educators and school administrators.

These issues which are still worrying most of the US school administrators are definitely felt by their counterparts in Hong Kong because of reasons mentioned in the previous section on the dilemma which faces Hong Kong's education system. The budgetary constraint which seems extremely common to a lot of organizations and institutions all over the world, is indeed creating a crisis situation in Hong Kong's education system on a whole. And the development of educational technology at tertiary level is definitely going to face the problem.

3.3 The CPHK Circumstances

The Educational Technology Centre (ETC) of the City Polytechnic of Hong Kong (CPHK) is probably one of the most comprehensive and properly structured teaching support centres of its kind among the tertiary educational institutions in Hong Kong.[5]

The Centre was planned and established in 1984 as one of the four support centres[6] when CPHK was about to schedule classes for its first batch of student in-take.

During its relatively short history of development, CPHK has been growing at an extremely fast pace. In the 1990-1991 academic year, the total student population was well over 11,500 with the support of a total staff population of nearly 1,500 (See Appendices A and B), about half of whom were administrative , professional and supporting staff while the other half were academics in fifteen teaching departments under three faculties (CPHK, 1991a, p.3).

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5 With seven years' direct experience and personal involvement in the development of the Centre, the author is confident to say that the present set-up of the ETC at CPHK is at least at the same level as those at Hong Kong Baptist College and Hong Kong Polytechnic, and is better than the rest of the UPGC group.

6 The other three support centres planned and established at the same time were the Library, the Computer Centre and the Centralized Laboratories.

As the Polytechnic evolved in the past few years, so did its ETC. The Centre has grown from less than 10 staff members in 1984 to about 63 persons in 1990. (See Appendix C)

In order to be in line with the Government's educational reform mission announced in 1989 (as mentioned earlier), plans have been drafted for CPHK to increase its student population to 18,000 by 1995. Just by 1991-1992 alone, the student population is expected to grow to 12,554 while staff number will increase to about 1,900. (CPHK, 1991a, pp 2-5)

It is only logical to expect that while the size of academic departments and the number of students expand and grow, the teaching support services will also expand and grow (even though they may not necessarily be growing at the same rate). However, something contrary to expectations happened in the middle of this expansion period.

Since mid-1990, the Centre has been undergoing an internal review process. Staffing and budget are frozen, except for the ones that has previously been committed and approved. Progress reports and users' surveys on the operations of ETC are required by the Polytechnic's Director. An internal review panel has been appointed to look into the case, and its recommendations will be seriously considered as guidelines for the Centre's future development. Up to the penning of this research thesis, nothing has been officially announced in respect of the review.

Even though ETC is still carring out its routine work, it is noticed that positions which have become vacant because of resignations of staff have not been refilled[7]. Those posts, especially at middle or senior level, are either shared by staff at junior rank or simply frozen until futher notice.

It is rumored that because of budgetary reason ETC would probably end up with at least one-third of its staff members "chopped off" and would be undergoing a major down-sizing restructure exercise.[8]

All of a sudden, the ETC is in distress[9]:-

- Head of ETC is having more consultative meetings with senior staff members of the Centre after returning from urgent meetings with the Director.
- Middle management staff, such as unit heads and team-leaders, are told that "something is going to happen to us" but with no further details provided.

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7 One example: The author left ETC of CPHK in Febrary 1991; that particular vacancy was advertised three times, a suitable candidate was identified by Head of ETC but rejected by the senior management.

8 The author has heard the same story from at least three different staff members who are at the middle and senior management level of the Centre.

9 The description of the unusal behaviour patterns happening in ETC is based on the impression gathered by the author after talking to staff of various levels, including managerial level, supervisory level, technical level and clerical level.

- Technical and production staff are advised to hold their equipment purchase proposals and concentrate more on the output side of their work.
- Clerical staff suddenly find that they have more rush reports and figure tabulations to work on.
- Junior and supporting staff are somehow loosely supervised and find themselves more detached from their supervisor.

Everybody within ETC is experiencing a certain degree of anxiety about its future. They can sense that changes are going to happen but they do not know how and when.

Apparently, the ETC at CPHK is in a crisis situation. As defined by Wiener and Kahn (1962), it is in the stage of having tension and stress among paticipants; it has less control over its routine events and is uncertain about its future, and it is at a turning point of an impending sequence of actions to be taken by the school top management. But the questions remain:

(1) What has happened within CPHK which has generated such a crisis situation?

(2) Is ETC the only department being adversely affected by this budgetary constraint? If so,

(3) why is ETC being so vulnerable to such a crisis situation?

(4) Would ETC be victimized ?

IV LITERATURE REVIEW

4.1 Changes in Education and Schooling

Some twenty years ago, Mcbeath (1969) identified the different stages of **changes in education**. The Mcbeath's model started out as an autocratic pattern through a transitional period to a democratic pattern that is to say, from a **teacher-dominated** stage through a **permissive** stage to an **inquiry-centred stage**. (see Appendix D)

This model also indicates the practice pattern and its associated outcome in relation to the convictions and beliefs for each stage:

-- If beliefs and practices are at Stage 1, then the teacher's major task is to transmit information to students and use media as **aids**.

-- If beliefs and practices are at Stage 2, teachers tend to be more permissive. They try to do things **for** the students instead of **to** the students. They tend to apply audio-visual **techniques** to their lecture presentations.

-- If beliefs and practices are at Stage 3, teachers are more likely to do things **with** students. And this is the stage that educational technology can best play its important role since instructional design and curriculum planning **processes** can help teachers interact a lot more with students in a variety of ways in accordance with the students' individual learning need.

About twenty years after Mcbeath constructed his model, Branson

(1990) came up with his design of schooling model. It classifies schooling designs of the past, present and future into three categories: the **oral**, **current**, and **technology-based paradigms**. (see Appendix E)

Branson's shifting paradigm **schooling model** reinforces the ideas suggested by the Mcbeath's model in the way that both of them indicate that the student-oriented inquiry-centred instruction urges for a significant shift towards instructional planning and technology application if desired educational goals are to be.

However, according to the survey figures collected from researches done in North America, only 10-15% of the education institutions can be categorized into the inquiry-centred stage, while 20-30% of them are at the permissive stage and the rest of them are still at the teacher-dominated stage.[1] Meanwhile, the situation here in Hong Kong cannot be expected to be any much better. Based on a non-scientific, not representative sample survey, it is estimated that less than 5% of school administrators, educators or trainers consider that the institution which they are working for is actually at the inquiry-centred stage.[2]

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1 Figures provided by Professor Jerry Kemp when he was in Hong Kong in Spring 1992 to present his key-note speech in the 2nd Annual Conference of the HK Association for Educational Communication and Technology.

2 This estimated figure was based on the ad-hoc survey done by Professor Kemp in the Conference metioned above.

If most of the institutions in our education system are really not ready to go into the technology-based inquiry-centred stage as indicated by the above-mentioned findings, the promotion of the ET concept and its potential benefits to the users and to the school management may seem to be an important area where more effort should be put by the ET advocates.

4.2 Organization Models of Educational Technology Services

Practically each education technology service centre should be unique. It should be molded by the goals, objectives, culture and organizational structure of its parent institution. Salid Eidgahy reinforces such an assumption:

> "Education technology services in colleges and universities are provided to assist faculty and students to enhance their effectiveness and efficiency. Learning is the central driving factor of an institution and is always, as a result, the major factor in the use of technology."
>
> (Tech Trend, 1991, 36 (5),45)

From his strong conviction about the use of educational technology, Eidgahy has identified four major approaches to the **organization** of **ET services**, namely (1) **holistic model**, (2) **integrated model**, (3) **components model**, and (4) **programme model**.

The **hoslistic model** is based on the belief that ET should result in the improvement of cost effectiveness as well as teaching and learning processes (Carnegie Commission on Higher Education, 1972). This approach also emphasizes the importance of effective communication, including human and non-human communications (Hinz, Jones and Hinz, 1980).

The **integrated model** also agrees on the idea that ET services can increase both the efficiency and effectiveness of education in the way

that it should achieve two objectives:

(1) Improvement of instructional support and development

(2) Improvement of faculty development

As a result, student learning and faculty teaching are considered as central to the improvement of effective and efficient education.

Accountability is the key to the sucess of this approach, because higher education institutions should provide ET services with proper support and information about effective utilization and budgets (Davis, 1978).

The **components approach** lists three basic components for the organization of ET services, they are: (1) **internal**, (2) **developmental**, and (3) **external** components (Allen & Allen, 1973).

The facilitation of the activities rendered by a media centre is called "internal component", such as production, maintenance, circulation and selection of media equipment. The developmental component emcompasses faculty development, instructional design, and evaluation of technology and services. Collections and reservations of equipment, and outside consultation work are considered "external component".

The component approach is more like a mixture of a stand-alone media centre and a specialist consultancy firm.

The **programme approach** was advocated by the Association of Educational Communications and Technology (AECT) in 1977 and 1989. This approach emphasizes the use of information resources to help make the ET services more approachable and easily acceptable. Centres which are set up by this programme approach will include the following activities:

- Support for instructional development
- Access to methods of teaching and learning
- Creative development of information resources
- Distribution and use of information resources

The complexity and volume of information has increased so rapidly that learners and teachers should be advised and assisted by the educational technologist on the use of multiple channels of teaching communication. (AECT, 1989)

All the above-mentioned approaches are meaningful in the sense that each of them indicates the inclination and emphasis of each ET services programme to a particular group of users who are specific to the services.

As to which one of the above-mentioned approaches should be adopted, this should be resolved by discussion and interaction between the top management and the head of the ET programme so that the selected approach should be practical and feasible in terms of its

implementation, and be ultimately relevant and compatible to the institution's needs and objectives.

4.3 AECT's Standards

Among all the public or private organizations which have been set up for the purpose of promoting the use and application of technology in education, the Association for Educational Communications and Technology (AECT) is probably the most well-known and influential[3]. With its main chapter in Washingtom, D.C., it has more than twenty chapters spread all over the world. the Hong Kong AECT was chaptered in the spring of 1990 and has a membership of about 200; most of the members are from education institutions, training centres of big companies and media consulting firms.[4]

In 1977, the Association first published its *Criteria for Planning the College and University Learning Resources Centre*, and five years after, its *Standards for College and University Learning Resources Programmes* was released. Another five years after that, the 2nd edition of the *Standards* was published. (AECT, 1989)

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3 The AECT was first chaptered in the 70's in USA and composed of mainly high school principals, college and university administrators, educational technologists and large corporation trainers. The primary goal of the Association is allow all the professionals in the educational and training entities to join forces, to share and to improve the quality of teaching and training with special emphases on the use of adequate technology and communication skill and the development of effective and efficient presentation strategies.

4 Information provided by AECT, HK Chapter

This *standards* is highly regarded by educators and educational technologists all over the world as the most authoritative source book in the field for the evaluation of a learning resource programme (LRP).[5]

The purposes of these standards are clearly stated in its introduction section:

> 1. To help the Learning Resources Programme director determine whether the institution is effectively providing learning resources services.
>
> 2. To provide the basis for a complete self-study and analysis of the Learning Resources programme as it currently exists.
>
> 3. To give the institution information about its Learning Resources Programme that indicates where it stands in relation to similar programmes throughout the country.
>
> 4. To be used as an analytical tool in determining past, current, and future budget levels as well as to provide an overall qualitative measure of the Learning Resources Programme's effectiveness.
>
> (AECT, 1989, viii)

The most important and core portion of the publication is its performance evaluation standards. They delineate the three different levels of performance of LRP's:

Minimal -- Defined as the lowest level of equipment, personnel and facilities necessary to begin service in that area. This level is titled "operational" in the management standard.

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5 LRP is an aggregate term used to denote the various kinds of media resource services, either hardware or software, designed and delivered to users for the purposes of learning enhancement. The LRP can be a unit, a centre, or even a whole organization.

Basic -- Defined as a second stage of development which provides an acceptable service capacity predicted on the day-to-day demands. This level is titled "leadership" in the management standards.

Advanced -- Defined as an expanded capacity necessary to support a sophisticated and comprehensive service. This level is titled "innovative" in the management standards.

(AECT, 1989, vii)

In order to get the most effective use of these standards, when they are put into their actual applications, it is recommended that a great variety of **performance aspects** need to be carefully evaluated by an **external assessor** or, even better, a panel of assessors.

The aspects which should be assessed are

(1) institutional standards,

(2) management standards (including the financial structure, information structure, and the professional calibre of the LRP's director), and

(3) programme standards (including the functions of media and equipment distribution, maintenance and engineering, production services, instructional design and faculty development).

These standards emphasize the assessment of the institutional, management, and programme standards at three different levels, yet each of these three levels should be taken as an essential component to a total service programme concept. All these three levels of standards should very much be in line with one another if a well planned LRP is to be developed and maintained.

Since the standards set out are of a generic nature and are not specific to any particular region or school system, as long as there exists an LRP, these standards can be adopted for evaluation purposes.

4.4 Organizational Life Cycles

Obviously, each organization has its own missions, objectives and organizational culture, and its structure and development should take into consideration all these important features so that it may have a sense of direction for its future development and growth. From the point of view of organizational behaviour, every establishment is destined to go through a chain of developmental stages in the course of its growth. Quinn and Cameron (1983) incorporate all these stages into a model, an organization development model (OD), which they named **Organizational Life Cycles**. (See Appendix F)

Within its life cycle, an organization develops through four different stages, namely: **entrepreneurial**, **collectivity**, **formalization** and **elaboration**. Along these various stages, an organization progresses through certain management efforts, such as instilling creativity, providing clear direction, adding internal systems and developing teamwork. But at the same time, it is bound to face certain **crisis situations**. These crisis situations call for different problem solving strategies: whether they be the need of leadership, the need for delegation and control, the need to cut down too much red tape, and most important of all, when the organization is at full growth, the need for revitalization.

If the top management of the organization do realize such possible crisis situations and implement effective and timely management efforts to rectify the circumstances, the organization should be able to survive and progress towards its maturity; otherwise, it would suffer from the possibility of a declination or would even end up as a total failure.

In the case of an educational setting, the educational technology service department is usually considered as a subset of the total organization. The roles, responsibilities, line of command, departmental status, budgetary allocation provision, and staffing establishment are all major considerations that have to corespond to the functions and role of its set-up, and this in turn has to fit in the parent organization's overall goals and objectives. The ups and downs, rises and falls of the whole organization will have direct influence on all of its operations and various departments.

This Organizational Life Cycles theory can be an adequate comparison model for the case of this research study, for it provides a framework to check the present development status of the case and is able to suggest a solution plan to resolve the possible problem that may happen during each stage. Of course, it shoul be noted that this OD model could only be valid provided that the objectives of the branch department and its parent institution (ETC and CPHK, in this case) are consistent and compatible; otherwise, there would not be enough justification for the

existence of the branch department.

4.5 Barriers to Technology Adoption

Besides the organizational culture and objectives, the management's perception and the user's acceptability of ET is also a major area for consideration when thinking of developing an ET service programme.

Garland (1991) perceives the functions of instructional technology as the reduction of training costs and improvement of performance. He recommends that new techniques and modern technologies be adopted to enhance the skills of the teachers in order to bring about the quality improvement of education. That means educational technologists are given the role to help organizations and institutions change and adopt new technologies: they should be the change agents.

But there are a number of major factors that need to be considered before changes can happen. These major factors are the **barriers to adopting new technologies** in education and training.

The key barriers are mainly human issues, including lack of knowledge, cultural traditions, risk aversion, and user acceptance. The other important ones are cost issues and infrastructure issues.

The common users of educational technologies are learners (students), instructional designers (professional staff), subject experts (academic

staff), servicing personnel (technical staff), and management (administrative staff). They are people with different personal backgrounds, knowledge bases, career objectives and risk-taking factors. Therefore, it is imperative that educational technologists should know who and where the clients are and also what their needs are (Anglin, 1991, p.255).

The common concept of cost issues lies mainly in the financial resources allocation to cover the development cost and the delivery cost of any technology-based service. But the more subtle cost issue lies in not adopting new approaches, which a lot of administrators minded to avoid risks do not realize.

The availability of and accessibility to ET services is another factor affecting users' acceptability. This has to do with the infrastructure of an organization. The physical distance between campus buildings, the time and effort that may be involved in the development of ET materials, the motivation for the user to use ET services -- all these are just some of the infrastructure aspects which may hinder the adoption of new technologies.

As Garland points out, some of these barriers are tied up with the overall structure of the parent organization, but the main problems lie in **people**. And these people issues can only be solved by improving

communication between the two sides concerned, such as having regular meetings, holding technical serminars and workshops on the latest developments in relevant technologies, listening to the users' feedback, assessing their needs, and providing a quality service programme through a team of well qualified and professional personnel.

4.6 Problems and Possibilities

In this age of dynamic changes in both the political and economic fields, no one can say for certain that efforts spent in any endeavour would definitely lead to desirable results. This is also true in the case of ET development.

Most recently, Gentry and Csete (1991) join hands in predicting the future of educational technology in the 1990s. In their paper, issues that seem less likely to be resolved by the end of this decade are labelled **problems**, and promising challenges labelled **possibilities**. It is stated clearly that the purpose of the work "is neither to praise nor to bury educational technology, but rather to look at part of its soft underside, and at some of the factors that show promise for its improvement." (Gentry & Csete, 1991, p.20)

Even though their study is not exhaustive, as they readily admit, and the problems and possibilities identified show no priority over one another, the predictions listed below can be adopted by this study as a checklist for the purposes of (1) identifying the unfavourable circumstances which may bring along cirsis situations, and (2) discussing the favourable factors that may provide solutions to overcome adverse circumstances.

Problems

1 - The boundaries of the educational technology field will remain poorly drawn.

2 - The curricular core of academic and other programmes designed to prepare educational technologists will remain ill defined and inconsistent.

3 - The bulk of research in the field will continue to be sporadic and diffuse.

4 - There will continue to be only limited use of primary criteria for evaluating instructional development process, product, or implementation.

5 - Undesirable side-effects of the entrepreneurial practices of individual practitioners of educational technology will continue negatively to affect credibility and effectiveness.

6 - There will continue to be inconsistent support for educational technology from administrators, educators, and trainers.

7 - There will continue to be a division between educational technologists and other educators over the theories of learning to which they adhere.

8 - There will continue to be inadequate response to the critics of educational technology.

9 - Confusion over the definition of and the need for

technological literacy will continue.

10 - The predilection of educational technologists and other educators to reinvent the wheel will not significantly lessen.

Possibilities

1 - The growing diversity of the student population will encourage the development of alternative instructional delivery programmes.

2 - Pressure from business, industry, and the government will force the educational establishment to better prepare graduates for the workplace.

3 - Business and industry will recruit increasing numbers from among their current employees and will subsidize their degrees in educational technology.

4 - Increasing access to electronically delivered instruction and other services will provide channels for delivery of instruction developed independently of traditional education systems.

5 - Sophisticated expert systems and other forms of artificial intelligence will find increasing application in education and training establishments.

6 - As applications of educational technology become more user friendly, many educators who are easily

frustrated by instructional technology will become adopters.

7 - Pressure for adoption of high-tech instructional delivery systems will come from a more knowledgeable student body.

8 - Independent learning skills will become increasingly important to students and to society.

9 - The natural desire of individuals to control their environments can be aided by technology.

10 - Educational technology will assist education institutions in their response to changing societal needs.

For obvious reasons, the above-listed "problems" and "possibilities" about the development of ET in the 90's are not all applicable to the Hong Kong social context, and are therefore not totally relevant to the case of this study. But Hong Kong is a cosmopolitan city and CPHK is "one of the newest and fast-growing tertiary institutions in Hong Kong" (CPHK, 1991a, p.1), it will definitely face some of the problems and possibilities which the rest of the world is expecting in the course of developing an ET programme.

4.7 Expanded Bridge Building Concept

In a previous section, we see how the overall role of ET is to serve as a bridge between the education domain and technology domain within an educational setting. And after going over the literature review section, it would not be difficult for us to further realize that the successful development of educational technology depends on a number of factors:

(1) The support from the top school management in terms of allocating resources and endorsing of ET program's structure -- the management aspect.

(2) The support from the users in terms of their acceptance and adoption of services -- the users aspect.

(3) The management effort and knowledge base of the service programme director -- the leadership aspect.

(4) The quality of the services and the personnel who render these services -- the service aspect.

(5) The mutual communication effort from the service users and service providers -- the communication aspect.

Futhermore, as mentioned earlier, the objective for the set-up of the ET programme should be in line with that of the parent institution. Otherwise, there would not be sufficient justification for the development of the ET programme especially in a crisis situation.

All the above factors form a consolidated model for the development of ET in that they are the "concrete blocks" for the construction of the "bridge" between the technology domain and the education domain at a tertiary institution, as shown in Figure 2.

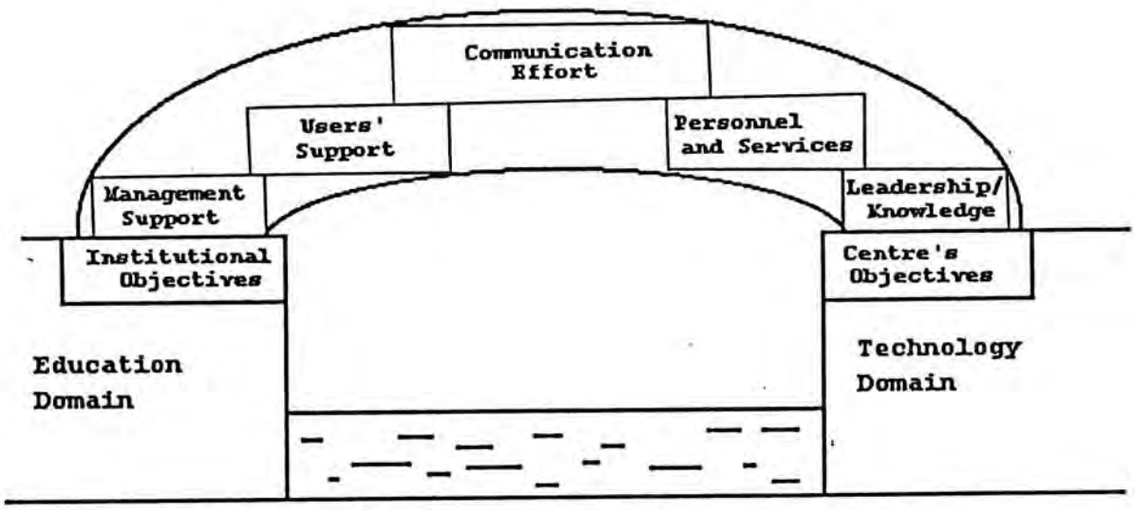

Figure 2: The Block Building Development Model of Educational Technology

This "block building" concept suggested here is the integrated model embodying the various functions and natures of ET based on the ideas gleaned from the studies, researches and models mentioned in the literature review section. Through the use of this simple model, we can

have an easy understanding of all the key factors which form the framework and the structure of the ET programme. And it can be clearly seen that the link between the education domain and technology domain within an educational institution is based on a communication effort. This communication effort is of great significance because it serves to increase understanding, decrease indifference and clarify misconceptions among all the three groups of key players in the model:

(1) the management

(2) the users

(3) the service providers (professional personnel and leader of ET programme).

Only by a mutually committed effort on the part of all the key players in this "block building" process can a quality programme be provided, barriers overcome, crises surmounted, possible problems avoided and potential possibilities explored and utilized to the benefit of the institution as a whole.

V HYPOTHESIS, APPROACH AND METHODOLOGY

5.1 Setting the Hypothesis

By nature, ET as an academic support service is basically driven by demands. At any start-up stage of a new institution, the "demand" will probably be "perceived" and "felt" by the school management rather than actually "exist" among the users. And once the ET services are launched, the driving force for their expansion and development should be the users' motivation to use the services and their adoption of them. The adoption of the services creates the on-going needs for ET's development.

As has been discussed earlier in this research, the ET service provider, the users and the school management form the main source of support for the development of an ET programme, and the latest development in educational technology -- the "process approach" advocated by most of the practising educational technologists and the AECT -- has definitely provide all of these key players a much boarder perspective for the expansion of ET's role and responibilities. At the same time, it has also brought along a much greater challenge to all of the key players in ET's development process.

This challenge mainifests itself in three different manners:

1. a challenge to the professional standard of the ET personnel[1] in terms of the quality of support and services rendered by them,

2. a challenge to the acceptability of the users (academic staff in most cases) in terms of their adoption of and involvement in the services rendered to them, and

3. a challenge to the perception of the school management in terms of their management decision on the allocation of resources (manpower as well as financial resources) under constraint.

If only one of the key players fails to meet the respective challenge, the development of an integrated "process aproach" for the ET programme is bound to be unsuccessful.

Since the aims of this study are to examine the key factors which affect the development of educational technology and to see whether educational technology is vulnerable in a crisis situation, it seems reasonable that if we set the hypothesis of this study around the key factors for the development of ET in respect of their relative effects in a crisis situation, we can probably get some meaningful insight from the findings and the vulnerability of the development of ET can also be indicated thereafter.

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1 ET personnel includes all staff members working for the ET programme. These staff members, including the head of department, may be at professional grade, administrative grade, technical grade, or clerical grade, but as long as they work as a team or as an individual to render support and services, they should be considered ET personnel.

Based on the above argument, the following hypothesis is generated: -

A deteriorating management perception is more important than the users' attitude in retarding the developmet of educational technology in a budget crisis.

The term "deteriorating management perception" refers to the institution's top management's impression of the role and importance of ET shifting towards the negative side (see discussions in Section 4.1, 4.2, 4.4 and 4.6)

The term "users' attitude" refers to the perception of the usefulness and acceptability of the ET services provided (see discussion in Section 4.5) In most of the cases, the perception of "usefulness" of an ET service is represented by the perception of the "importance" of the services and the "satisfaction" gained from adopting the services. If the services are perceived "useful" they are more likely to be "accepted".

The term "budget crisis" refers to the tight budgetary constraint on the availability of financial resources, which happens more often than any other crisis at higher education institutions in recent years (see discussions in Sections 3.2 and 4.5).

5.2 Choosing the General Approach

Because of the exploratory nature of this research, it is believed that a case study approach will be more suitable for the purpose of this study. The development of ETC at CPHK is used for this case study for the reasons provided earlier in Section 3.3.

As widely recognized, the case study approach has benefits as well as drawbacks. Robbin (1988) helps to provide one of the most commonly acknowledged features of case studies:

> "Case studies represent an in-depth analysis of one setting. They are thorough descriptions, rich in details about and individual, group, or organization. The primary source of information in case studies is obtained through observation. Occasionally backed up by interviews and a review of records and documents. .... They are an excellent device for initial exploratory research and for evaluating real-life problems in organizations."
>
> (Robbins, 1988, p.23)

By adopting the case study approach, the author is fully aware that in his quest for in-depth information and specific details, the generalizability of this study has to be somewhat sacrificed.

5.3 Selecting Research Methods

As required by the nature of a case study, a number of research methods have been used to collect the information data needed. These methods include:

(1) **Direct personal observations**

(2) **Personal interviews**

(3) **Documentation analysis**

(4) **Comparison study**

Direct personal observations made by the author himself played a very important role in this study. Having the advantage of being directly involved in the setting up of CPHK's ETC since its first stage of development[1] and also being able to stay with the Centre long enough to have seen a large part of its development history, the author is at an advantageous position to comprehend and to analyze the organizational structure, the subtle political interactions, and the operation aspects of the Centre. In addition, some first-hand insiders' views can be more easily accessible and contradictory information can be verified with its sources.

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1 The author joined the ETC of CPHK as Senior TV Producer/Head of Video Production in December 1984 (the first year of its operation) and left the Polytechnic in May 1991. In these years, the author worked very closely with all the staff in the Centre and was directly involved in the top decision making process of the Centre when he was acting head of department on a number of occassions while the Head was on leave.

In addition, the author also conducted some personal interviews with a number of people who were directly or indirectly involved in the development of the Centre. In the course of this study, a total of twelve staff members[2] talked with the author, mostly in a relaxed and informal atmosphere. The gist of each of the conversation was noted down and summarized to form a base of reference about what actually happened in the Centre during the period of this research (1984-1991).

Analysis of relevant papers and reports were carried out so that supporting evidence could be provided, rationales for certain decisions or actions could be more objectively justified, and the arguments made in the course of data analysis could be better substantiated.

In the data gathering process, three sets of survey reports compiled by two different key players of the case[3] were obtained. The data and findings from these surveys will be used to support the argumentative analysis. Relevant publications published by CPHK or the ETC would also be used as important reference materials.

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2 For confidentiality, the names and titles of the people interviewed are withheld. These groups of people represented a cross section of staff members in the managerial, professional, technical and clerical levels within the Centre and one of them was from outside the Centre but was a Unit Head of another administrative department.

3 One by the ETC itself and one by the Internal Review Panel set up by the Director of CPHK.

Since there are other academic support centres within CPHK, it would also be appropriate and useful to make a comparison of the operations of these support centres so that their different levels of vulnerability can be compared.

5.4 The Research Procedures

Guided by the above-mentioned methods, the author examines the various aspects of this case study by following the procedures listed below:

- Investigating the history of the ETC of CPHK in order to examine its organizational structure, developmental stage, and operation pattern in respect of its organization life cycles and possible crisis.
- Identifying the present standard of the ETC programme by applying the AECT's Standards.
- Searching for the purposes and rationales (either given explicitly or implicitly) for the present internal review process imposed on the Centre with special emphasis on the management perception of ETC's role and importance.
- Exploring the circumstantial situation of the ETC in respect of its possible development in the near future.
- Comparing the present situation of ETC with other academic support centres.
- Verifying the validity of the hypotheses of this study with the support of relevant findings.
- Discussing the possible solutions targeted towards the specific problems areas of the development of ET.

VI OBSERVATIONS AND FINDINGS

6.1 Organizational Structure

Back to its start-up stage in 1984, the top management of the City Polytechnic of Hong Kong seemed to be a group of keen believers in the concept of centralized control of resources. It was believed that by centralizing all the learning and teaching support services, administrative efforts and paperwork would be kept to a minimum, inter-departmental conflicts could be reduced, and cost-effectiveness could be ensured (Riecks, 1976). Based on the centralized planning and usage strategy, expenses for regular equipment procurement could be lowered because of large quantity purchase and repeat orders; furthermore, the money saved could be channelled to buy some expensive high-end equipment. The logical justification for such a decision was that user departments could share the same piece of equipment purchased with the same amount of money instead of competing for a fraction of the total sum of money to purchase a number of cheaper low-end machines for the use of each individual department.

This centralized approach was implemented so widely in CPHK that practically any departmental functions other than classroom teaching

and office administration were handled by a specific support centre on campus. This was the reason why all the activities related to computer usage were handled by its Computer Centre; all laboratory exercises and experiments were done in the Centralized Laboratories; all library books were kept in the one-and-only Library; and all the classroom AV supports, equipment maintenance, media productions, and instructional development functions were handled by the Educational Technology Centre (ETC).

The ETC Handbook clearly describs its centralized function and the provision of services in different areas:

> "The Educational Technology Centre (ETC) provides a range of services to support the Polytechnic's academic activities. The centre is currently organized into four sections: professional development, media production, classroom services and engineering support.
>
> The professional development unit is responsible for a range of programmes and other activities which form part of the Polytechnic's staff development initiatives included in these are a series of short courses on basic teaching skills and other specialized sessions on course design, student assessment, course evaluation and educational management. Also available is the expertise to produce computer based training packages including interactive videos.
>
> Extensive facilities for graphic design, television and audio production as well as offset printing and other reprographic services are available in the media production section.
>
> The ETC classroom services section supplies relevant equipment for staff and student use such as video monitors, overhead projectors, sound systems and slide projectors and ensures that it is available when required for classes.
>
> ETC is also responsible for the maintenance of all audio-visual equipment installed throughout the Polytechnic."
>
> (CPHK, 1989)

From the above descriptions, we know the following important aspects about its services:

- Aim of Services -

  mainly to support CPHK's academic activities[1];

- Users of services -

  staff members and students

- Areas of services -

  (1) professional development

  (2) media production

  (3) classroom services

  (4) engineering support

The departmental status of the ETC is the same as that of any other academic support centre, and is equivalent to that of a teaching department in CPHK.

By referring to its organization chart (See Appendix G), we know that the Centre is led by a department head with adequate number of general office support staff. For the four support services areas, the line of command is rather straightforward:

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1 As a matter of fact, the ETC also support activities outside the scope of CPHK's academic activities on a consultancy basis.

- A group of support staff in a particular service section are headed by a professional staff member of that field. The professional staff member is given a position which is at the "lecturer or above" level, e.g. "Senior TV Producer".
- When there is a combination of specialist services to form a higher level of interrelated functions, (such as Graphic Design Section and AV Production Section in the media production area) then the services of these sections will be grouped under a unit and be headed by a staff member at "principal lecturer" level, e.g. "Principal Educational Technologist".

The departmental status, the chain of command and the internal operations of ETC have not changed throughout its 7-year long development history (from 1984 through 1991). The head of department has remained unchanged, the four major areas of services are still the same except that some of the section heads have come and gone just like any other organization.

From the organizational development point of view, the ETC of CPHK has been growing quite steadily without any major disruptive changes. Though the staff number increased from 9 in 1984 to 63 in 1990 and was about to expand to 72 the year after, the scope of services provided was also expanded accordingly. Since 1985, after all the unit heads and

section heads had reported duty, the provision of support and services kept increasing because of increased staff support, which was in line with the rapid growth of the Polytechnic as a whole, but new service units were not created during this period.

With reference to the **Organizational Life Cycles Model**, the ETC might have grown so rapidly with the overall development of CPHK that it quickly passed over the "entrepreneurial stage" and "collectivity stage", and reached the "formalization" stage which is characterized by adding more internal rules and regulations to its different systems instead of exploring new areas of services.

As a matter of fact, at this "formalization stage, "red-tape" and "bureaucratic practices" are two of the most common problems which would have happened, and when the problems have aggregated to a certain extent, the organization would either be accused by its users for inefficiency or be deserted by some of its staff members who would rather not tolerate the frustrations caused by bureaucratic practices.

The ETC of CPHK was found having some of these problematic syndrome (this will be elaborated in later discussions about the general compaints of inefficiency in some service areas).

6.2 Organizational Model and Programme Standard

In a way, the Centre reflects the idea of the Learning Resource Programme (LRP) concept advocated by the AECT and the "process approach" advocated by the Commission of Instructional Technology. The (1989) *AECT Standards* suggests that there are three levels of learning resource programmes: **minimal**, **basic** and **advanced**. The set-up and organization of the Centre is very similar to that of the advanced programme level. It provides not only the minimal equipment and technical support services but also assists users in a wide range of production functions such as graphic design, text layout, printing, photography, audio and video production. And most importantly, the centre has been providing a lot of faculty development programmes each year in the areas of course design, student assessment, course evaluation and educational management for the CPHK academics. 46 short courses and workshops have been planned for 1991-92 academic year. (CPHK, 1991b, p.31)

In addition, the Centre has been taking the lead in many aspects of ET development among all tertiary education institutions in Hong Kong:

-- **It is the first institution which used the Betacam format (a broadcast-quality video production format which is the world's leading standard) for its in-house productions.**

The use of this equipment in 1985 was even earlier than that of Radio Television Hong Kong[2] and Asia Television[3]. At present, the Chinese University, the Hong Kong Polytechnic and even the production unit of the Vocational Training Centre[4] have switched to this format.

-- **In 1988, the Centre produced the first interactive video disc of its own for the teaching of accounting subject.**

In recent years, interactive technology has become the most up-market and trendy development for computer-assisted training programme in the instructional field.

It is not until recently that the Library of the Hong Kong Polytechnic successfully stored part of its 35mm slide collections on CD-I[5], which is also a form of interactive technology.

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2 The Hong Kong Government's broadcasting and media production department.

3 One of the only two commercial TV broadcast stations in Hong Kong.

4 A government agent which provides assistance and consultations to Hong Kong's vocational training needs.

5 The short form of Compact Disk Interactive. This technology stores a huge amount of video materials (still or moving) on a 5" laser disc and can be retrieved, played back and manipulated through the use of a computer and be shown on a TV monitor almost instantly at extremely high picture quality.

-- **The Centre was the first to install a central distribution system for its campus audio-video playback network in 1985.**

The system pulls all the video playback capacities from different machines together at a central location and re-distribute the AV signals to any location on campus that has an output TV monitor installed.

This system is meant to be time-saving and cost-effective for the modern classroom teaching environment which relies quite a lot on video materials presentations.

This same system was then modified and was adopted by the Hong Kong University Library for its Non-print Section in 1991.

-- **Most recently, the Centre procured a G.E. Tarlaria Projector for CPHK's Small Theatre.**

This machine is so far the best and the most expensive[6] of its kind in the video market for the viewing of high quality film, video and computer presentations.

None of the other UPGC institutions has ever got this kind of machine so far.

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6 The listed price for one set of this machine was over HK$500,000.00 in 1990.

The Centre has a strong emphasis on its professional development services. In 1990, its Professional Development Unit has ten professional staff members, a secretary and a unit head. In fact, this unit occupies 5 out of the 8 senior positions in the whole ETC (see Appendix C). It is claimed that this unit encompasses the expertise in the areas of course development, instructional design, assessment and evaluation, and teaching strategies, including computer assisted learning, use of media in teaching, distance education and resource-based teaching" (CPHK, 1991b, p.1).

All the above-mentioned achievements and arrangements somehow reflect the ETC's keen interest in assisting the application and diffusion of modern technologies to its teaching community and is trying to keep abreast of the most up-dated development in this "Information and Technology Age."

As a matter of fact, the Centre is adopting the approach of providing a full range of services for the **process** of teaching, planning and coordination so that teachers can do things **with** their students in a technology-based environment. Such an approach is just what the **AECT Standards** (1989) is advocating, and this **inquiry-centred stage** of teaching environment is what **Mcbeath's "Technology-based Paradigm"** is urging for today's training and instructional field.

By referring to the mission statement of the CPHK that:

> "(it) is to provide higher education for professional practice which anticipates and responds to community needs and the effects of social and technological changes"
>
> (CPHK, 1991a)

the organizational model of ETC is corresponding to that of its parent institution. The "process approach" and the provision of an advanced, integrated programme should be able to respond to most of the needs of its users. And in its first few years of establishment, the ETC was indeed given a very significant status in the management heirarchy. Its roles and potential importance were fully recognized by the top management in the form of generous allocations of resources for the support of its quick and strong start-up.

6.3 The Change of Top School Management and More

The organizational structure and operation pattern of ETC basically remained unchanged in the course of its development; however, some changes happened within CPHK in the past two years which caused a series of adjustments on the overall operation of CPHK.

In May 1989, when the first Director of CPHK finished his contract and decided to go back to UK, a local Chinese professor took over his post and has become the second and current Director of the Polytechnic. Not too long after the new Director's arrival, a number of changes were proposed in connection with different aspects of the operations of the Polytechnic.

Two issues among these proposals which might have some effects on the operations of ETC are:

(1) Changing the line of command of some support centres.

(2) Reviewing the effectiveness of the "centralized resources" policy.

The new Director was convinced that, in order to provide better and more responsive services to teaching needs, some support centres should come directly under the control of the Associate Director - Academic Affairs rather than report to the Associate Director - Resources as before. The proposal was approved by the Polytechnic's Council and

was adopted in the school year 1990-1991.

In the same year, after 5 full years of operations, the Centralized Laboratories (CL) were considered not suitable for the Polytechnic's specific environment and were dismantled and re-structured into a new form of existence - one Faculty Laboratory Centre plus five Departemental Laboratories. (CPHK, 1991a, pp 13-16).

Right after the dissolution of the Centralized Laboratories, a review on ETC's operations was initiated, and an internal Review Panel was formed by the Director to examine the performance of the ETC. (The Panel was composed of 6 senior staff members: 3 Deans from 3 Faculties, the Student Affairs Officer, the Finance Officer and the Principal of the College of Higher Vocational Studies[7])

Since mid-1991, the Review Panel has conducted meetings with staff members outside and inside ETC in search of information which would be useful for its task. The "Chapter One - Executive Summary" Section of a "Confidential Report" compiled by the Finance Office for the consideration of the Review Panel shows that the main purpose of the review is to examine ETC's "cost-effectiveness" aspect and not the "quality" aspect of its services. (See Appendix H)

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7 The College, established in 1991, is an extension of CPHK and offers only sub-degree courses for its students.

Meanwhile, in response to the adverse circumstances, the ETC has been trying very hard putting all its strength together in order to prevent anything happening to the Centre which might be as fatal as the dissolution of the Centralized Laboratories.

Upon the request of the top management, ETC has compiled an elaborate report detailing every aspect of its operations with full listing of its activities and a lot of statistical figures[8] in order to impress the top management that ETC is making its meaningful contributions to the Polytechnic throughout these years.

Prior to the writing of this ETC's Report, the Head of ETC conducted several meetings with all heads and deans of academic departments to discuss matters concerning ETC and its services. There were all together 16 respondents out of a possible total of 18. A summary was written with a brief account of the points being discussed during these meetings (see Appendix I).

Furthermore, for those academic staff who were below the rank of "Head of Department", a cross section of about 40% of academic staff in all departments were invited to fill out a "Evaluation of ETC Services" questionnaire (see Appendix J) in order to have their opinions surveyed.

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8 In one of the appendices attached to the ETC's Report there were altogether 19 pages of information detailing each of the projects which the PDU of ETC had done from 1.7.90 to 30.11.91.

The survey was done in July and August 1991, and with this questionnaire, the respondents were asked to rate the various services of ETC in terms of **importance** and **quality**. A 4-point scale from "very important" or "excellent service" to "of no importance" or "service was poor" was used and a section for free written comments was also included.

The results of both surveys carried out by ETC itself were considered acceptable and favourable from the ETC's point of veiw[9] and the summaries were included in the Report as supporting evidence for ETC's contributions to the Polytechnic.

Even though ETC had put a lot of effort into its Report, for one reason or another, the top management was obviously not very happy about the kind of information provided. In late 1991, the Review Panel conducted another users' survey on ETC's performance. (See Appendix K). From the way the questionnaire was designed, the main purpose of this survey was to reflect the users' views on the **cost-effectiveness** of ETC's services. In the survey, the respondents were asked about the frequency of their using ETC's services by items and categories, and explanations would be required if the respondents had not used the service at all.

9 The author was given the comments of these survey results by the Head of ETC.

It should be noted that the surveyed period was divided into two parts: one from 1.9.90 till 31.8.91 and the other from 1.9.91 till the survey date (which was around end of November 91) Obviously, data about the school year 90-91 would be used to check against those of the first quarter of 91-92 and for the further projection of a full year operation for easy comparison.

Unfortunately, almost all the operations of ETC's services were all rate "not-cost-effective" by the data and findings of this survey. The one and only area of services which was considered "cost-effective" was the Reprographic Section. Moreover, the Professional Development Unit was the worst in performance, according to the survey.

At the end of the "Chapter One - Executive Summary" section, it was clearly stated that

> "In summary, except for the reprographic services, other services provided by ETC are considered to be not cost-effective. There are many areas where management and operation controls should be improved to provide more cost-effective and efficient services."
>
> (CPHK, 1991c, p.9)

On a whole, the survey revealed that

> "in 1990/91, total ETC staff cost amounted to $14.5 million. Compared with other UPGC institutions (except HKUST & Lingnan, CPHK has the highest unit costs per FTE[10] and per academic staff for ETC services (excluding reprographics)."
>
> (CPHK, 1991c, p.1)

10 FTE is the short form of "Full Time Equivalent". Two part-time students will be considered one FTE.

To be more specific, the "Confidential Report" listed the findings of its survey on the ETC's PDU services as below:

- Cost of PD services is the highest among the UPGC institutions, the CPHK PD cost doubles that of the HKP and more than triple that of the Baptist.

- There is no structured in-service training courses organised for new staff especially for those who have no previous tertiary teaching experience.

- While around 476 part-time lecturers were employed in 1990/91, none of these workshops/seminars were offered to these part-time staff who may not have previous tertiary teaching experience.

- There is no workshop/seminar organized to students to cope with learning in tertiary institutions which is completely new to these fresh graduates from secondary schools.

(CPHK, 1991c, p.23)

Obviously, because of the findings of this survey, the Centre is going to face a hard time: It has to justify its "non-cost-effective" operations, or face reality and await the "verdict" of the Review Panel, which is going to make recommendation according to the survey result very soon.

Since ETC is only an "academic support centre", its value of existence should be justified by its academic support functions and the needs of these functions. The two Reports mentioned in this section have a clear distinguished difference -- their centres of focus. The ETC's Report was focused on the "users acceptability" and "programme quality" aspects of ET services, while the one prepared on the management's behalf was focused on the "efficiency" and "cost-effectiveness" aspects of ET

services.

This difference in emphasis is the key to "transform" the whole perception of ETC in terms of its value of existence.

6.4 A Closer Look at the Surveys

Since the two reports made by the two key players in the development of the ETC are so incompatible by nature that they seemingly exclude each other's value and significance.

But when we take a closer look at the design of the surveys from which the two reports were prepared, we know they are bound to be different because they were designed to measure different quality aspects of the ETC.

ETC carried out two opinion surveys on its users before writing the ETC Report. The questions raised and responses given were mainly oriented towards the users' acceptability of these services.

The opinions of the heads of academic departments (deans or acting deans) were presented in Table 2. It shows that the ETC's overall services were satisfactory, though there were some areas with room for improvement. The data from the opinion survey on the academic staff of CPHK were re-arranged by the author for a more meaning analysis.

From the original data set, the survey responses were categorized into 2 4-point scales from the "very important", "important". "of little importance" to "of no importance" and from "excellent service",

"satisfactory service", "service need improvement", to "service poor". In the author's opinion, these 4-point scales can be made much easier for understanding if we group them into 2-point scales by adding the first and second sets of figures together as a group and adding the third and fourth sets of figures together as another. By so doing, the 50-50 division line of "important" or "not important" and that of "satisfactory" or "not satisfactory" can be drawn, the ranking of the survey questions can be made possible, and the mean score for each category can be calculated.

Based on the arrangement suggested by the author, Table 3A contains the survey results about the Instructional Media Production Unit, Out of the 5 questions raised on this unit, the following points are observed:

1. Among all the 5 areas of services, 2 areas are rated "satisfactory", 2 are rated "not satisfactory", while the remaining one is rated "50-50".
2. The "printing of teaching materials" ranked first both in terms of its "importance" and its "users satisfaction" aspects.
3. The second-rank "satisfactory" service is "provision of high quality graphic work for teaching materials" but it only occupies the last rank in terms of its "importance"
4. The least "satisfactory" service area is "the production of instructional videos" where its "importance" ranking is third on the list.

Concerning the results of the Classroom and Technical Services Unit lists in Table 3B, the following observations are made:

1. Form the overall percentage of the "importance" score of all the service areas in the Unit, users seem to have a very high demand on them (the mean is 85.86%).
2. Out of 7 questions raised on these areas of services, none of them is below the 50% mark in terms of its "importance" and "satisfactory" aspects.
3. "Supplying of equipment from the central loan pool" ranks 1 in the "satificatory" column, but it only occupies the 3rd rank in terms of "importance".
4. "Setting up of audio-visual equipment in classroom" ranks 1 in "importance", but ranks 3 when assessed by its "satisfactory" performance.
5. The least concerned area of service in this Unit is "provision of advice concerning model/brands of audio visual equipment" and it ranks last both in terms of its "importance" and "satisfactory" scores.

Regarding the results of the survey done on the Professional Staff Development Unit, Table 3C details the survey finding as listed. The following observations are made about the PDU services:

1. Out of the 7 questions asked about the various service areas, all of them get positive response.

2. The two most positively perceived service areas are "the provision of evaluation services relating to courses, modules, teaching, etc. "(1 in "important" and 3 in "satisfactory") and "the provision of professional development seminars on aspects of teaching, learning, assessment, etc. "(both rank 2 in "important" and "satisfactory").
3. The most upsetting performance is in the "provision of resource materials to assist aspects of teaching (2 in "important" ranking but 7 in "satisfactory" ranking).
4. Unexpectedly, the most satisfactory area of service is in the "provision of one-to-one advice on matters relating to teaching and/or other aspects of instructional development (5 in "important" ranking but 1 in "satisfactory" ranking).

Regarding the demand, expectation or need of the users, the mean score of each service area can be used to draw some indication. In terms of the "importance" perception, the mean score for the Instruction Media Production Unit (IMPU) is 69.62%, the one for the Classroom and Technical Services Unit (CTSU) is 85.86% and the one for the Professional Development Unit (PDU) is 69.2%. Meanwhile, for the "satifaction" perception, the mean scores for the three respective units are 51.72%, 68.96%, and 66.7%. Based on the figures provided, we get to know that the users are more keen on the services of Classroom and Technical Services than the others and they are more critical of the

service provision of Instructional Media Production Services and tend to be more liberal to the services of Professional Development Unit on both the "importance" and "quality" of programme aspects.

Generally speaking, all the three main units of service were quite well received by the users about their usefulness (mean scores on "importance" : CTSU - 85.86%, IMPU - 69.62% and PDU - 69.2%), and their "quality of service" aspect also got a rather good result (mean scores on "satisfactory" level : CTSU - 68.96%, PDU - 66.7% and IMPU - 51.72%).

All the above findings suggest that, except for a few specific areas of services, the overall users' impression about the quality of services provided by ETC is satisfactory, and the users' acceptability of its services is quite positive.

In the light of these survey results, it can be demonstrated that ETC, indeed, had quite a quality ET programme and the users generally would have no problem accepting and adopting these services.

While the ETC's Report emphasizes the variety of programmes provided to the users and the users acceptability of these services, the survey carried out under the direction of the Polytechnic Director was mainly to measure the "cost-effectiveness" of the ETC services. Even though

there was a column in the questionnaire for the users of ETC services to assign a "usefulness" score, but this provision was only applicable to the service areas in Instructional Media Production Unit, as for the Professional Development Unit, the "usefulness" provision was replaced by a "user-friendly" category, while for the Classroom and Technical Services Unit, the "usefulness" provision was totally deleted. While no reason was given as to why the questionnaire was designed in such an inconsistent manner, we can only speculate that the "usefulness" of the classroom and technical services and the professional development services is considered to be unimportant for the managements' information because:

(1) the "usefulness" aspect of the services is so obvious that there is no need to verify this aspect, or

(2) the "usefulness" aspect of the services is not relevant to the intended usage of the survey data and therefore it is either omitted or replaced by something more relevant.

No matter whichever assumptions is taken by the designer of the questionnaire, it can be assumed that the "usefulness" aspect was intentionally replaced and omitted. The reason for such an assumption is that by going through the "confidential report" prepared by the Finance Office to the Review Panel, nothing has ever been mentioned about the "usefulness" perception of the service users. 20 out of the total 28 findings are, one way or another related to the "cost-

effectiveness", "efficiency" and "ultilization" aspects of the services and facilities of ETC. Table 4 provides a at-a-glance run down of the "Executive Findings" about the various ETC services.

From the way the management's survey was designed, to the presentation of data in the Report and then, to the wording and tone used in the Report, it can be obviously sensed that the top management of CPHK is not holding a very positive perception of the role and importance of ETC. Otherwise, it would have spent more effort to get a more balanced view of the users' perception of its "usefulness" and its "quality of service", which have the most essential bearing on the users' acceptability of these services. Unless the school management is desperate to take quick action, otherwise, every decision made should be based upon all the suggestions of all the key players who involve in the process so that the vested interest of all parties can be well considered.

It was further evidenced by the information provided by one of the senior staff in ETC that during a meeting with the Director, he was told that "ETC was spending too much time and too much money in doing too little work[11]". This perception of ETC's functions is certainly very different from the one which the Centre enjoyed in the first few years of its development.

11 The wording in quotes are not meant to be the exact wordings at the time of the conversation; they carry only the essence of the meaning.

Based upon the arguments made about the case of CPHK's ETC in this section, it can be seen that if only the top management is having a less than positive perception of the role and importance of ET development, whenever there comes a budgetary crisis, where "cost-saving" and "cost-effectiveness" are of the primary concern, then the ETC is in a vulnerable position and its development will be jeopardized.

6.5 ETC is Victimized

As mentioned in the previous section, the explicit purpose for the setting up of the Review Panel was to find out the "cost-effectiveness" of the ETC services, but there must be motivation for such an action.

According to the recent scenario of the CPHK's development on a whole, there are two issues which have created some operational adjustments after the change of the Director:

(1) Budget for the whole Polytechnic has been quite tight for the past couple of years.

(2) Expatriate staff have not been given renewals for their contracts.

For the 1990-1991 school year, the operating budget for the whole Polytechnic was cut by 10% across the board, as compared with the last year's budget. Each academic and support department was required to trim down its staff salary expenses as well as operation expenditures.

According to ETC's top management, last year the Centre managed to meet the target because a number of staff (at least four of them) left the department during the year, and their vacancies were not filled.

But for the year 1992-1993, the budget allocated for ETC is even tighter. It is said that the Centre has to cut its budget by at least 50%.

Besides budget problems, staffing composition is another underlying problem which affects the operations of the Polytechnic recently.

As the Polytechnic needs to expand quite significantly in the next few years (as mentioned in Section 3), it also has to work under an extremely tight budget in the years ahead. One of the possible solutions is to cut down the running cost. Since staff salary is one of the major items of expenses, checking the growth of the staff size or even reducing it will be a quick and certain way to tackle the budget problem.[12]

In 1987, the Polytechnic offered a superannuation scheme option for its staff. Since then, a great number of staff have joined the scheme. Those who did not joined and are still on contract terms would probably be the ones who are not really thinking too much about a long service in the Polytechnic, and a large majority of them are expatriates recruited from overseas.

12 Ming Pao Daily, 13 July 1992.

Since the overseas expatriates have been enjoying much better welfare package as far as housing benefits, education allowances and travelling package are concerned, these people have always been under some undue criticism from their peers who are serving on local terms.

Even though the expatriates themselves have not created this unfair situation, it is true that a double standard in terms and conditions has been under a lot of pressure not just within the Polytechnic but in the whole public sector, especially in the Government service[13].

Quite coincidentally the Professional Development Unit (PDU) of ETC, which is considered the weakest in terms of its "cost-effectivness" performance by the manangement, filled 4 of its 5 senior positions with expatriate staff whose salary packages are a lot higher than any other sections within the Centre. And this unit has been the main focus of the "cost-effectiveness" evaluation process.

At the end of May 1992, it is known that one of the expatriates in the PDU will be leaving the Centre when his contract expires, and there is another expatriate whose current contract is due to expire this summer has not been offered a second contract so far[14].

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13 This is one of the main arguments for the advocacy of the "localization policy" within the Government departments.

14 Under normal practice, staff under contract terms would be approached by the Personnel Office for their contract renewal negotiation unless it is unlikely that a second contract is to be offered.

Furthermore, there have been rumours that for the rest of the three remaining expatriates in the Centre (including the Head of Department), two of them will have to leave after their current contracts end two years later.

If what has happened to ETC has also happened to other academic support centres within CPHK, then ETC could not be considered "victimized." But when we come to a comparative examination of the underlying nature of these centres, we may then capturize the reason which makes ETC more vulnerable than the other support centres.

Since the Library, the ETC and the Computer Centre (CC) are all established as Academic Support Centres in CPHK, the main objective of their set-up and their services should basically be the same.

When carefully comparing the basic characteristics of these three Academic Support Centres, it will not be difficult to realize that though they are grouped together as "support centres", there are a number of fundamental differences among them, such as their historical development foundation, definition of roles and responsibilities, users' needs, qualification recognition, line of responsibility, etc. The author has juxtaposed the key features of their differences in a checklist format for easy reference.

Checklist for Comparison of the Basic Characteristics of Three Academic Support Centres in CPHK

	LIBRARY	COMPUTER CENTRE	EDUCATIONAL TECHNOLOGY CENTRE
Historical Development Foundation	very strong	not so strong	weak
Definition of Roles & Responsibilities	very clear	clear	not clear
Users' Needs	existed and assumed	existed and to be assessed	assumed and to be verified or to be created
Possibilities of Inducing Inter-departmental competition for Internal Resources	unlikely	likely	likely
Line of Responsibility	reporting to Associate Director - Resources	reporting to Associate Director - Resources	reporting to Associate Director - Academic Affairs
Professional Accreditation of Qualification of Senior Staff	yes	yes/no	no
Users' Motivation to Request and to Apply Services Provided	high	high	low
Possibility of Inducing Users' Resistance	low	medium	high
Requirement for Budgetary Justification	not strict	strict	strict

It is quite obvious that the Library and the ETC represent two extremes in all respects while the CC lies somewhere between the scale. It is also perceivable that since the library system and its services have so long been established in the educational setting that it will be extremely difficult to challenge its "existence value", its "usefulness" and its "importance". It would be hard to believe that any well-established tertiary institution would go by without any sort of a library service.

However, it is arguable that an educational technology centre is more vulnerable to crisis situations than a Computer Centre. Since both of

these two centres draw their nutrition from this "Age of Technology" and the historical foundations of both of them are not very strong. It is, therefore, worth some extra effort to look into the case of CPHK and find out more about their fine differences.

The objective of the Academic Support Centres in CPHK is clearly defined in the handbook published by its Computer Centre:

> "The objective of the Academic Support Centres is to utilize the allocated resources efficiently and to provide centralized and integrated academic support services to the Polytechnic. Essentially, the centralization approach provides a common basis for assessing needs and priorities of equipment and/or software. In addition to the acquisition of equipment the Academic Support Centres also provide technical support and maintenance services to staff and students"
>
> (CPHK, 1987, p.1)

Since both ETC and CC are centralized support centres which are basically technology-oriented, they both provide services and support to their users (staff and students) in the forms of technical set-up, maintenance, equipment acquisition, program production or software design, consultation on media (software/hardware) selection and courseware development for their users on a Polytechnic wide basis.

It would also be meaningful and useful to compare the development of the ETC and CC of CPHK in view of the fact that they were both set-up at the same time and have developed under the influence of the same organizational culture and in the same context. The external and internal factors which have contributed to or have adversely affected the

development of CPHK on a whole would basically have the same bearing and effect on these two Centres. With such an assumption, it is hoped that the fundamental differences of these two support centres can be identified and the different levels of vulnerability of them can be further illustrated.

A study of the recent development of the CC of CPHK, shows that it has reached its full growth in recent years. As a matter of fact, the CC had a staff number of almost 100 in the fall of 1990 (CPHK, 1990, p.1) and its service areas had extended from five in 1987 to eight in 1990. Table 5 provides a detailed listing of the staffing support and the areas of services provided over the period of 1987 to 1992.

From the information provided, we know that the service areas of the CC has been the same since the fall of 1990 but its staff number has decreased by about 10%. The exact reason for the staff decrease has not been spelled out officially, but such a cut back is in line with the overall guidelines given by the top management of the CPHK on the across-the-board budget cutback of 10% for all departments.

By comparing the development pattern of the two centres it is found that:

- ETC stopped expanding its services since 1985 while CC kept expanding its services until 1990.

- ETC planned for continuous staff expansion up until 1991 (from 60 in 1990 to 73 in 1991) while CC reached its maximum number in 1990 and has cut its staff size since then.

By further studying into the line of command, it is found that the CC has remained under the control of the Associate Director - Resources and, starting from academic year 1990-91, the ETC has been under the command of the Associate Director - Academic Affairs instead of the Associate Director - Resources as when it was first established.

Furthermore, all staff members in CC are local Chinese, including Head of Department, while ETC has 6 out of its 8 senior posts occupied by expatriates on overeas terms.

Yet, the fundamental difference between two Centres are the needs for their services and the aims for their service provisions.

ETC mainly caters for the need of effectiveness and efficiency in teaching and learning. These services come in the forms of support in the audio-visual area, graphic design and printing area, and professional development area. These areas are loosely tied together or independent to each other. In some sense, ET is a collective co-existence of many specializations mixing together. It is an evolving domain and its

definition is somehow ambiguous and arbitrary.

On the other hand, the service provisions made by CC are very clear-cut, solid and perceivable. They cater for the various needs in respect of computing services. These needs are more visible and tangible:

- as a subject of study
- as a method of learning
- as a computational tool
- as a tool for administration

(CPHK, 1990, pp.1-2)

The differences in the needs and service provisions create different levels of perception of "usefulness" and "importance" from the management and users. Those two aspects add substantial support to the existence value of the support centres. Regardless of the same external pressure from outside the centres or the internal problem generated from within the centres, the perception about their "usefulness" and "importance" is the fundamental strength for the support of their development.

As shown in Figures 3A and 3B, the base of the support system for the development of CC, the gap between the users and service providers are much narrower than those of ETC.

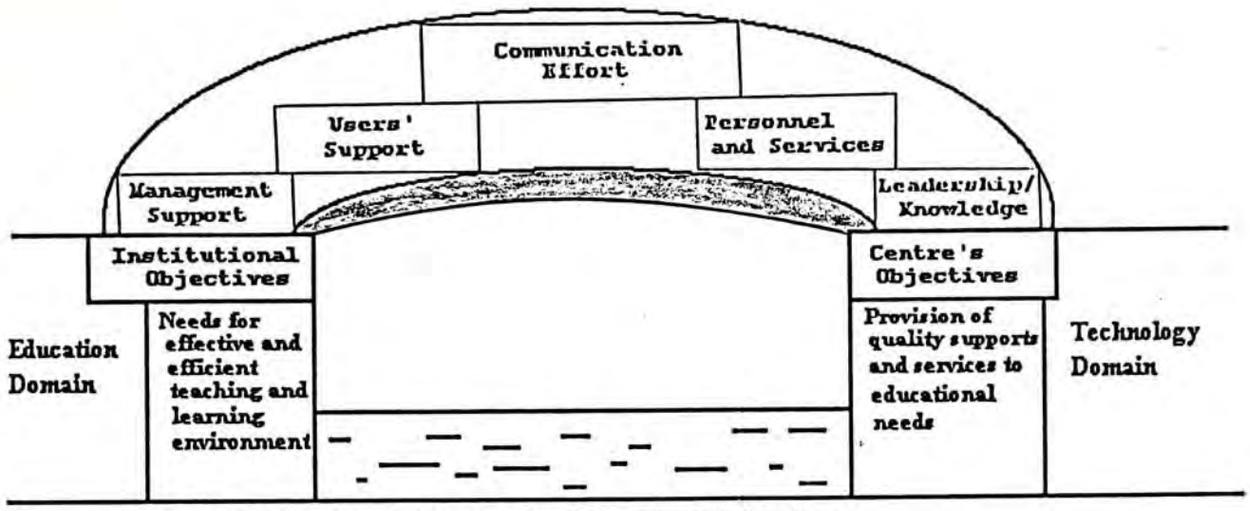


Figure 3A: The Support System of an Educational Technology Program Development

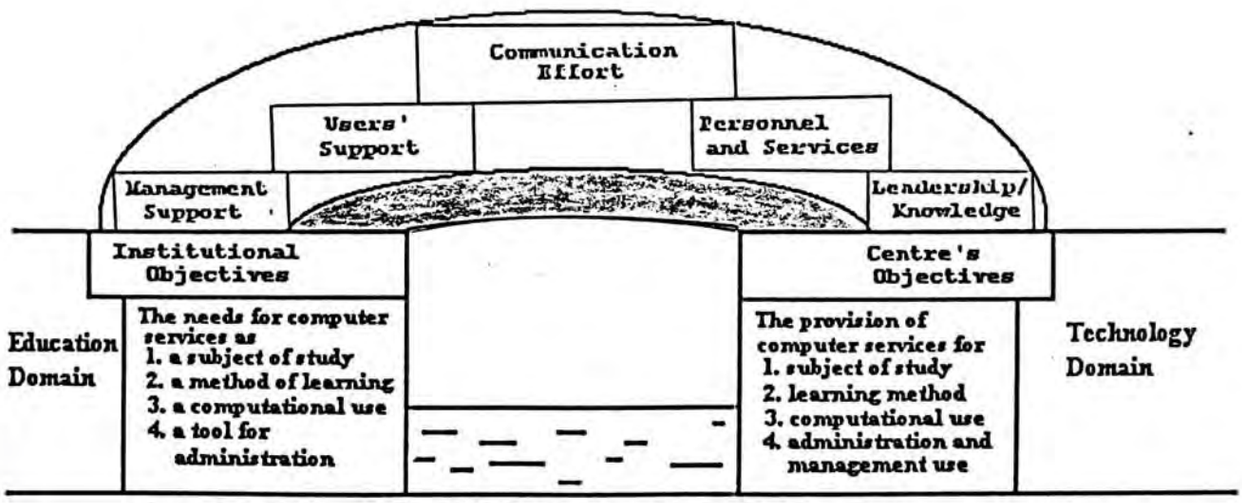


Figure 3B: The Support System of a Computer Service Development

Down to the bottom line, what are the basic difference between a computer centre and an educational technology centre? The simple answer is that the computer centre is so important and essential nowadays that any higher education institution cannot function without it while the educational technology centre, in most cases, is only supplemental and not essential: an institution can still go by without it.

Taking into consideration what has happened to ETC and other similar academic support centres, it is evident that, because of the non-essential status of ET, the Educational Technology Centre of City Polytechnic of Hong Kong is a victim of circumstances caused by a swing in the negative direction of management's perception of the role and importance of ETC in a budget crisis.

Moreover, the inappropriate use of the survey instrument has also victimized the ETC of CPHK.

The survey designed and the data collected by the CPHK's management are totally inappropriate for the assessment of the effectiveness of the ET services. It should be noted that the simplest and most important function of ET is "enhancing the effectivness of learning and teaching by the use of technological equipment or process".

By definition, the "effectiveness" of a ET programme should only be represented by the "effectiveness" of the teaching and learning outcomes. The "cost-effectiveness" criterion is not suitable to be used for the measure of ET's "effectiveness" itself. "The use of technological equipment and process" is only a means, while "enhancing the effectiveness of learning and teaching" is the end, and we could never measure the means for the justification of the end-result. We can only measure the end-result for the justification of the means being adopted, not vice versa.

No matter whether the management of CPHK was deliberately or unintentionally committing such a mistake, the surveyed was done, the data were gathered and interpreted to form part of the evidence for the management's "Confidential Report", and the result of the report findings was putting ETC on a very difficult and vulnerable position.

In view of the information collected, data analysis and observations made concerning the case of this study, there is a strong ground to argue that the hypothesis set for this research is supported. That is to say: A deteriorating management perception is more important than the users' acceptability in retarding the development of educational technology in a budget crisis.

VII DISCUSSION AND CONCLUSION

7.1 The Possible Future of ETC of CPHK

According to the Organizational Life Cycles Model, any organizational structure will go through four stages of development in terms of size and maturity. In Section 4, it was discussed and shown that the ETC of CPHK evolved very quickly from the "entrepreneurial stage" through the "collectivity stage" into the "formalization stage." Furthermore, the various situations that have happened from outside ETC has shortened the ETC's life cycle so that the Centre in fact stayed just a short while at its 3rd stage and was quickly forced to move onto its 4th stage of development, i.e. its "elaboration stage," It is only at this stage that the Centre comes under a lot of pressure on its performance from the top management, especially as the management does not know very well about the various potentials of educational technology (Toshi, 1984).

For better or for worse, during this stage of development, we will see the organization move towards one of the following possible directions:

(1) be filled with new energy and be heading for an even better condition after revitalization effort from the management, or

(2) be reduced in staff size and scope of services upon a negative result and unfavourable finding of a review process,

or

(3) even worse, be totally disrobed of its contributions and its importance and be "chopped up" into various pieces and fall into a decline.

From the three possible outcomes suggested by the Organizational Life Cycles Model, there seems very little hope that the ETC would be revitalized. The simple reason is that the circumstances imposed on the Centre is so focused on its weakness[1] that it will not have sufficient justification for its present operations if the management's concern is more on "cost-effectiveness" than on the "quality" and "usefulness" of its services. It is understood that very often quality and cost-effectiveness do not get together very well with each other (Kearsley, 1986). There are a lot of daily examples that "quality" cannot and should not be substituted by "cost-effectiveness", such as a jet-plan trip for a cruiser tour, and a fast-food store for a hotel coffee-shop, or even a torch light for a candle. Today's educational technology has embraced some sort of a creative quality, for example, the production of an instructional video or the design of a course package, which require time for their inception, research, planning, design, production, etc. "Creativeness" and "effectiveness" should be the concern for these kinds of work but not "cost-effectiveness". It is unfortunate that, in the case of CPHK, a rather well established educational technology programme with quality services is to be victimized because of a "non-cost-effective" reason.

1 It is very obvious that the wordings used in the "findings" sections of the "Confidential Report" were all very negative and full of "fault-finding" atmosphere.

ETC's future destiny is quite gloomy from the author's point of view. It is quite possible that the Centre will be broken up into pieces. Different production units might be maintained but would operate on a much smaller scale and be attached to some other major branches.

The possible arrangements:

(1) Graphics Production Section may be attached to Information and Publicity Office.

(2) Reprographic Section may be attached to General Secretary Office (now called Personnel Office) or the Information and Publicity Office.

(3) AV Production Section may be attached to the newly created City Polytechnic Enterprises Limited, which is established to handle research and development projects contracted by outside clients on a piece-meal charge-back basis.

(4) Classroom and Technical Service Unit, because of its "hardware" nature and being considered the most essential of all services (means score of "importance": 85.86%), may be the only unit of the Centre that downsizing will be kept to its minimum, and may remain in ETC for some basic AV support services.

(5) Professional Development Unit (mean score of "importance": 69.2%) may be totally abolished or, at most, be kept with only half of its staff strength and remain in ETC together

with some basic graphic layout capability by the use of desk-top publishing computer.

The above scenario is probably the worst situation that will happen. If it should happen that way, it is really the end of ETC and will set another bad example of how institutions are taking advantage of the vulnerability of educational technology after the Chinese University's restructuring of its UIMS in the 1991-1992 academic year (the case was mentioned briefly in Note No.7 of Section 2).

7.2 Implications on Other Institutions

Even though the research findings in this case study is specific to ETC of CPHK, the social context that CPHK is now experiencing is basically the same as that of the other UPGC institutions in Hong Kong. Though this does not mean that the exact "victimization" situation would happen to other higher education institutions here in Hong Kong, the result of this case study certainly hints that if the school management is not fully realizing the potential benefits of ET and is not willing to give a whole hearted support to the long term development of ET, such sad happenings might be repeated when crises strike again.

Having seen the ups and downs, rises and falls of the various ET service programmes offered by the tertiary education institutions in Hong Kong, the author believes that the findings from the CPHK case should be able to throw light on the way other tertiary institutions in Hong Kong should plan their ET service programmes, especially institutions which are starting to set up their programmes or are thinking of restructuring their existing programmes.

7.3 Gentry and Csete's Predictions Reconsidered

With reference to the number six problem of the Gentry and Csete's Predictions (1991) which suggests that "the inconsistent support from administrations and users" is going to be one of the major problems for the ET development in 90's in the USA, it is sad to say that this problem has already existed and has caused damage here in Hong Kong in the case of CPHK.

When reconsidering all the predicted "problems" and "possibilities", the author finds that the following ones may also be applicable to Hong Kong's situation and therefore extra care and precaution should be taken to avoid their possible damage:

(1) the poorly drawn boundaries of ET (problem No.1)

(2) the sporadic and diffuse research effort (problem No.2)

(3) the limited use of primary criteria for evaluation (problem No.4)

(4) the unfaithful ET practices (problem No. 5)

(5) the wasteful efforts and misuses of ET (problem No. 10)

When we consider the above-listed issues more thoroughly, we may see that they are rather indicative of Hong Kong's situation:-

- The "poorly drawn boundaries" make the nature of ET unclear and ambiguous to the users, the management, and

even the ET professionals. Conflicts of interest, misconceptions and misunderstandings are bound to happen.

- The "sporadic and diffuse research effort" provides not enough scientific and real-life information about the practice of ET. Therefore, it also obscures the true meaning and full potential of ET.
- The "limited use of primary criteria for evaluation" buries the true value and basic quality of an ET programme. As in the case of CPHK, the management did not use any of the evaluation criteria suggested by the AECT and did not appoint an external assessor. This ruthless practice is endangering the environment for ET's existence.
- The "unfaith ET practices" indicates that there are ET professionals who are taking advantage of the situation but not doing what their professional ethics call for.
- The "wasteful efforts and misuses of ET" signify that the basic training and professional standard of some ET personnel are not meeting the criteria expected of them.

It becomes quite obvious that if we want to strengthen the prospect of the ET's development, we need to pay a lot more attention and effort to overcome some or all of these hindrances and make good use of the upcoming possibilities in the "Age of Information and Technology", as

suggested by Gentry & Csete.

The prospective possibilities which may be as good to USA as to Hong Kong are:

- the need for a more diversified and technology-based instructional delivery system from a more knowledgeable student body;
- the pressure from society with its demand on a better prepared, technology - oriented, university-graduate workforce;
- the many alternative accesses to electronically delivered instruction, such as cable TV and satellite TV channels for technology-based learning;
- more advanced development in sophisticated expert systems and other forms of artificial intelligence (AI) be adopted in education and training establishments;
- educators and users who are easily frustrated by IT will be adopters when the application of ET is getting more user friendly.

In view of the above positive trends which are going to happen in the next few years, there is definitely room for ET's development in Hong Kong provided we are knowledgeable and wise enough to take advantage of the "possibilities" and to get rid of the "problems".

VIII RECOMMENDATIONS

Though the development of educational technology is highly vulnerable during crisis situations, and people tend to resist changes and create barriers for adoption of new technologies (Garland, 1991) it does not mean that we should not spend our time and effort on ET's development any more. On the contrary, after understanding more about the weakness of its nature on one hand and realizing its possible contributions and potentials on the other, we should have a stronger conviction that ET will be playing a more and more important role in enhancing the effectiveness and the quality of teaching in Hong Kong -- provided we can do it right!

"Doing it right" means we have to start from the basics. And the most basic and fundamental factors for something to be understood and be put into practical use are information and knowledge generated through research efforts and practical experience.

From the practical perspective, it is deemed necessary that certain tactics need to be incorporated into the developmental process of an ET program. These tactics may sound a bit "common sense" but they carry a lot of weight when put into practice:

(1) **Match the services of the ET programme with its delegated missions.**

Always aim well at the target before triggering the shot. A good and comprehensive programme is totally unacceptable if it does not justify its existence. Make sure that the aim and objective of the ET programme is compatible with that of the parent institution.

(2) **Use the most "suitable technology", not the most "advanced technology."**

The most advanced technology always costs more and results in risky and unstable performance, while the most suitable technology would be the one which is well tested in the market and is mature enough to be fully utilized at a comparatively low cost with a sure standard of performance. In most cases, the management would feel uneasy when thinking of providing a huge budget for the start-up cost of an integrated ET programme, but because of the technological nature of ET, the "front-end loading" financial requirement is always inevitable. It would be a wise move if we start an ET programme with an inexpensive but suitable system to cut down the "front-end loading" burden.

(3) **Take the "gradual approach" rather than "fast-track" approach.**

The "front-end-loading" requirement can even be more costly if we consider a "fast-track" integrated service approach to start with. But by phasing in different stages of development, from the "minimal" to "basic" and then to "advanced" level, the "gradual approach" would give more time and more opportunities for resource allocations, equipment amortization, budget forecast, user familiarization, and sometimes for the lead-time to generate enough demand from the users, and also can provide an adaptation period for the users, the management, and the service programme personnel.

(4) **Rely more on "need assessment" than "estimated projection".**

The users' needs can be rationally assumed, be wildly estimated or be assessed through carefully designed surveys. The most convincing way to get the fundings and budget approved from the management is by the presentation of sensible data collected from the users' survey. Since ET is a demand driven business, it should not and cannot be developed in a vacuum. It needs to be user-centred and need-oriented, especially at its second stage

("collectivity stage") of development.

(5) **Strengthen Communication Link with Users and Management.**

Education is a communication endeavour; and the advance of new technologies also requires communication channels for its dissemination. The role of an educational technologist is to bridge the gap between education and technology, and communication skill is a "must" and a powerful "tool" for gaining the supports of the users and the management.

All the above suggested tactics can not only tune down the issues on "costing", and "effectiveness" problems but also provide enough warming up period for the users (teachers, students, or others), the management and the professional staff so that all parties concerned can be more prepared to accept and to adopt ET for the enhancement of teaching effectiveness and quality.

From the research perspective, it is hoped that more efforts could be geared towards the following areas:

(1) An across-the-board comparison of all the UPGC institutions in Hong Kong in respect of their ET programmes regarding their structure, status, funding, operation, areas of services,

availability of equipment and user demographics, etc.

(2) The different perceptions of the "importance" and "quality" of the various aspects of ET from the users', management's and ET programme director's points of view. Similarities and differences should be identified and analyzed.

(3) The different needs and emphases on the demand of ET services by different academic departments and by different institutions with different orientations, such as liberal arts colleges, polytechnics, and research-oriented universities.

(4) The assessment of teaching effectiveness before and after the application of ET on a subject to subject, department to department, faculty to faculty bases.

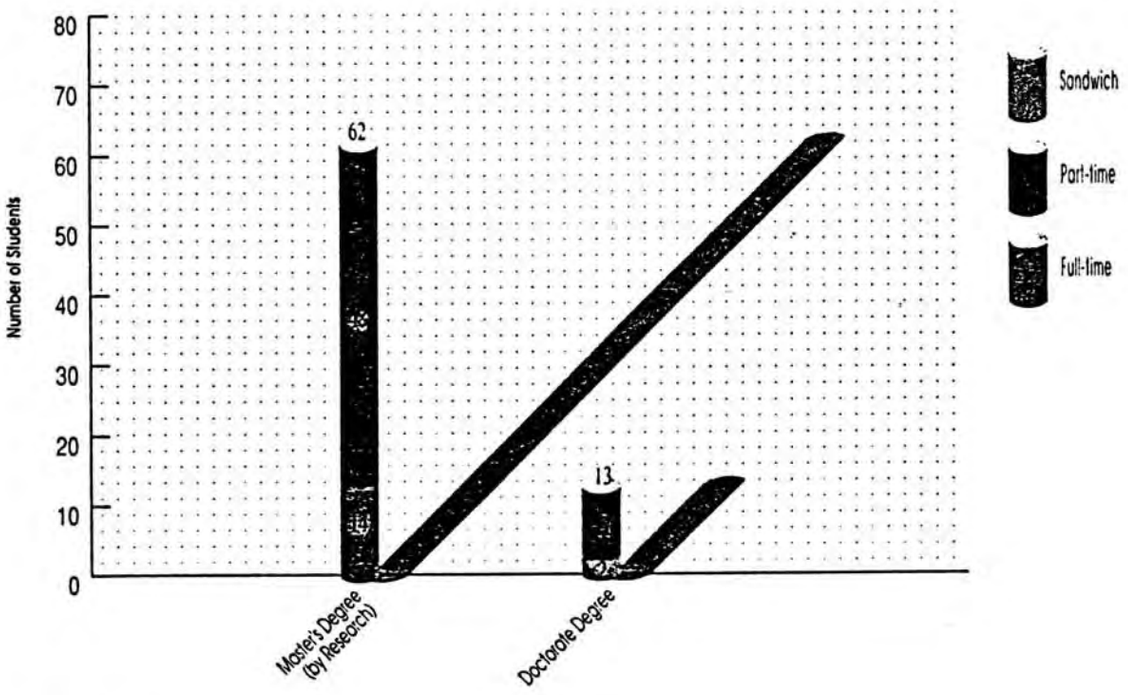
It is hoped that, through the above-proposed research efforts, the most basic and fundamental aspects of educational technology development in Hong Kong can be better understood, and better planning and strategic coordination can be initiated accordingly, so that a healthier environment for ET's development at the tertiary education level may be established.

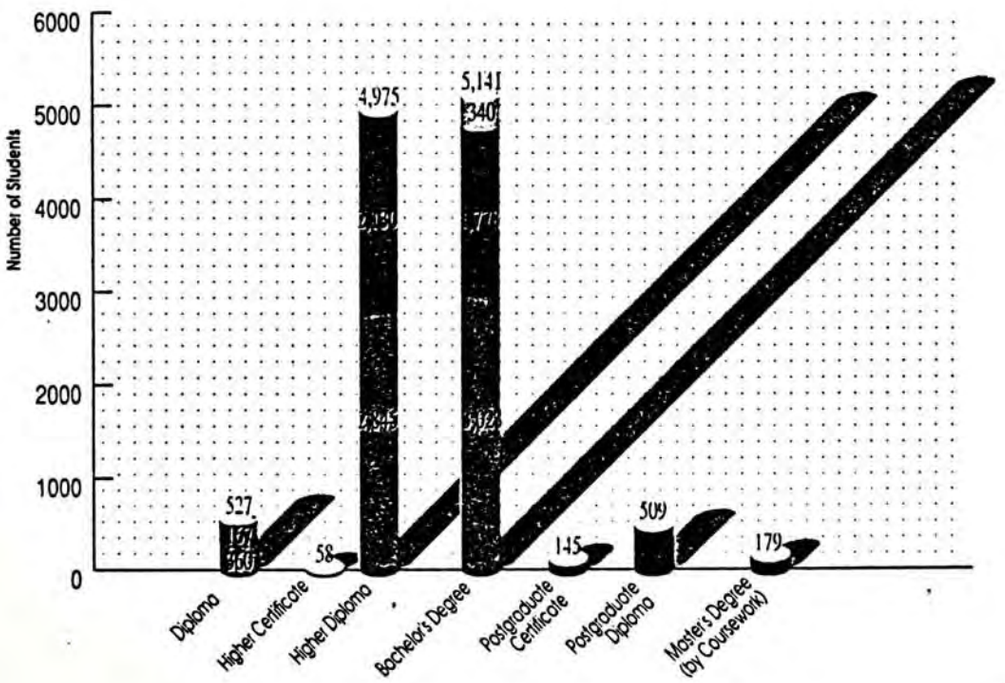
APPENDIX A : 1990-1991 CPHK's STUDENT NUMBER

(Source : City Polytechnic of Hong Kong, Postgraduate Prospectus 1991-1992, P.4)

Student Registration by Course Level 1990-91

On 31 December 1990, the total student population stood at 11,534, plus 62 MPhil and 13 PhD students. In 1991-92, the student population is expected to grow to a total of 12,554, of which 7,123 will be students enrolled on full-time courses and 5,431 on part-time courses.



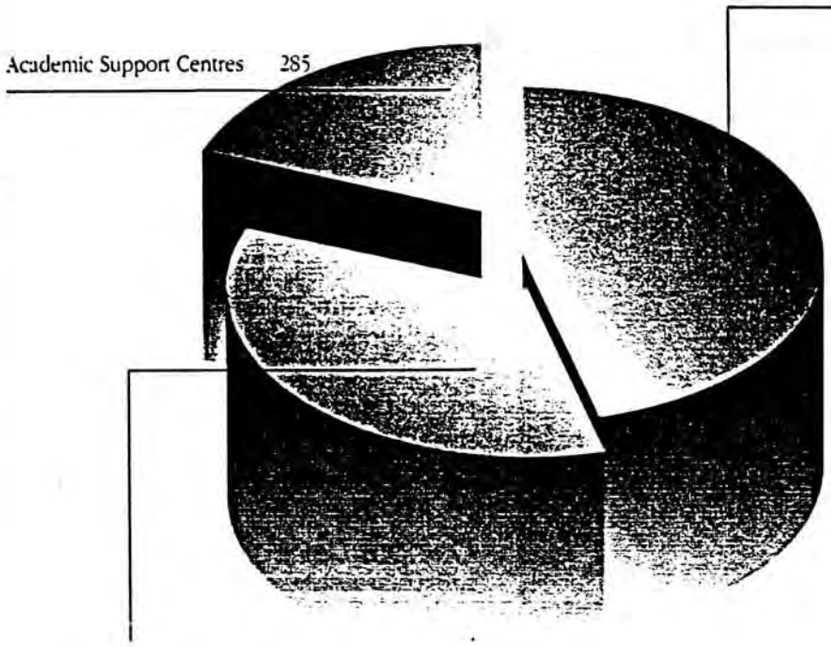


APPENDIX B : 1990-1991 CPHK's STAFF NUMBER

(Source : City Polytechnic of Hong Kong Postgraduate Prospectus 1991-1992, P.5)

Staff Numbers

(Figures as at October 1990)



Directorate and Administrative Offices 524

Grand Total: 1,496

The total staff population is expected to grow to 1,900 in the 1991-92 academic year.

APPENDIX C : 1990 INTERNAL COMMUNICATIONS DIRECTOR OF ETC/CPHK

(Source: Educational Technology Centre, City Polytechnic of Hong Kong)

Educational Technology Centre

Post/Section	Name	Room No	Ext No
Head	Mr Alan K Cutting	B2717	8211
Personal Secretary	Mrs Louisa P C Lee	B2717	8201
Administrative Assistant	Miss Sana T S Lai		8215
Audio Visual Assistant II	Ms Cora Y M Cheung		8205
Professional Development Unit			
Principal Educational Technologist	Mr Ken J Stafford	B2711	8204
Personal Secretary	Mrs Claudia F Y Cheung		8203
Sr Educational Technologist	Mr Pat W Boyle	B2719	8202
Sr Educational Technologist	Dr Mavis E Kelly	B2703	8209
Sr Educational Technologist	Mr Jonathon P Marsh	B2713	8212
Sr Educational Technologist	Miss Julianne W Y Wong	B2701	8214
Educational Technologist	Mr Anthony Kan	B2721	8483
Asst Educational Technologist	Mr Stephen C F Au		8799
Asst Educational Technologist	Miss Tracy M H Lo	B2721	8769
Asst Educational Technologist	Mr Vincent C C Ng		8744
Asst Educational Technologist	Miss L C Wong		8352
Audio Visual Assistant II	Miss Sandy Y P Pang		8206
Instructional Media Production Group			
Principal Educational Technologist	Mr John Durham	Y2652	8213
Personal Secretary	Ms Julie W C Yung	Y2652	8216
Video/Audio Production Section			
Senior Television Producer	Mr Tony W L Lam	Y2505	8382
TV Producer	Mr Alex W Y Ngan	Y2504	8208
Audio Visual Assistant II	Mr Jason K L Cheung	Y2702	8245
Audio Visual Assistant II	Mr Charles C C Wong	Y2702	8245
Audio Visual Assistant II	Mr Deacon W C Yun	Y2702	8245
TV Studio			8936
TV Control Room			8388
Graphic Design Section			
Senior Graphic Designer	Mrs Toni T N Chan	R2614	8375
Graphic Designer	Mrs Janet S M Sin	R2615	8248
Technician (Graphic Design)	Miss Agnes Cheung		8394
Technician (Phototypesetting)	Mrs Paulina S M Mak		8246
Technician (Photography)	Mr H K So		8371
Audio Visual Assistant I	Miss Margaret C H Pang		8393
Audio Visual Assistant II	Mr Albert W W Au		8370
Audio Visual Assistant II	Miss Sinphia S K Leung		8249
Audio Visual Assistant II	Mr William W S Tong		8370
Graphic Design (Enquiries)			8376
Reprographic Section			
Reprographic Officer	Mr Paul P B Yuen	Zone 5 Level 1	9388
Senior Reprographic Technician	Mr Kenneth K F Chow		]
Reprographic Technician I	Mr Ben T C Chan		]
Reprographic Technician II	Mr Benny S W Chan		]
Reprographic Technician II	Mr Cheng Shun Shing		]
Reprographic Technician II	Mr Chang Chi Hong		]
Reprographic Technician II	Mr Tam Chick Lim		] 9385
Reprographic Technician II	Mr Tsang Wing Keung		] 9386
Reprographic Technician II	Mr Tse Ming Wai		]
Reprographic Technician II	Mr Wat Wai Kwong		]
Reprographic Technician II	Mr Wong Ping Ki		]
Reprographic Technician II	Mr Yeung Kwok Leung		]
Classroom and Technical Services			
Engineer	Mr Vincent W S Wong	Y2501	8342
Senior Technician (Electronics)	Mr Perutz K M Wong	Y2511	8238
Technician (Electronics)	Mr Michael K C Chan	Y2511	8390
Technician (Electronics)	Mr Karry Y K Wai	Y2511	8239
Audio Visual Assistant I	Mr Luiz K Y Li	Y2502	8343
Audio Visual Assistant I	Mr David C M Tsang	Y2502	8348
Audio Visual Assistant II	Mr Godwin T O Cheung	Y2503	]
Audio Visual Assistant II	Miss Celia Choi	Y2503	] 8341
Audio Visual Assistant II	Mr Jimmy Ho	Y2503	] 8344
Audio Visual Assistant II	Mr Steven K H Kwong	Y2503	] 8350
Audio Visual Assistant II	Mr Ng Sai Kit	Y2503	]
Classroom Attendant	Ms Chan Lai Ping	]	]
Classroom Attendant	Mr Chu Kay Iu	]	]
Classroom Attendant	Ms Chung Fung Kam	]	]
Classroom Attendant	Mr Hui Chung Shan	]	]
Classroom Attendant	Ms Leung Kwei Gi	] 4001G	] 7083
Classroom Attendant	Ms Ng Po Ka	]	]
Classroom Attendant	Ms Siu Wong Siu Yin	]	]
Classroom Attendant	Mr Yan Kwok Hing	]	]
Fax			7888210

APPENDIX D: **McBEATH'S CHANGES IN EDUCATION MODEL**

(Source: based on Kemp, J.E. (1991). A Perspective on the changing role of the educational technologist, *Educational Technology*, June 1991, p.17)

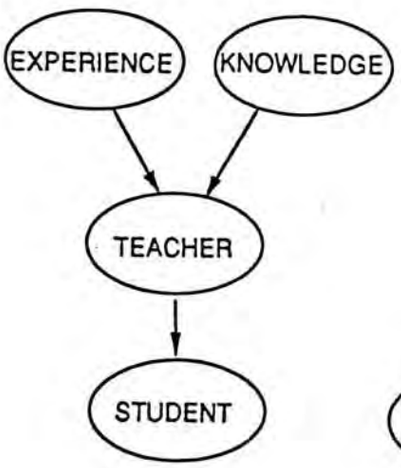
Stages of Change in Education

	Stage 1	Stage 2	Stage 3
Learning Enviroment	Teacher dominated	Permissive	Inquiry Centred
Instruction Method	Class Teaching	Group Teaching	Individual Learning
Grouping Method	Standards Grouping	Age Grouping	Readiness Grouping
Way of Interaction	Extrinsic Manipulation	Random Reinforcement	Meaningful Involvement
Treatment of Technology	Aids	Techniques	Process

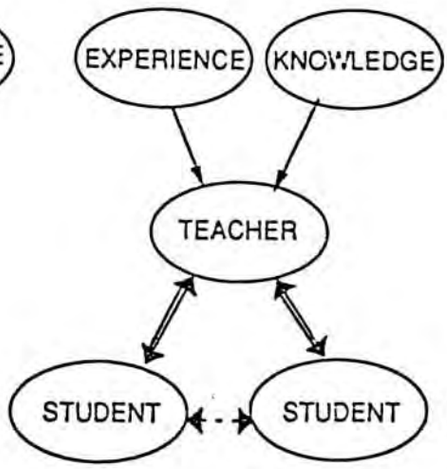
APPENDIX E: **BRANSON'S SCHOOLING MODELS**

(Source: based on Kemp, J.E. (1991). A Perspective on the changing role of the educational technologist, *Educational Technology*, June 1991, p.15)

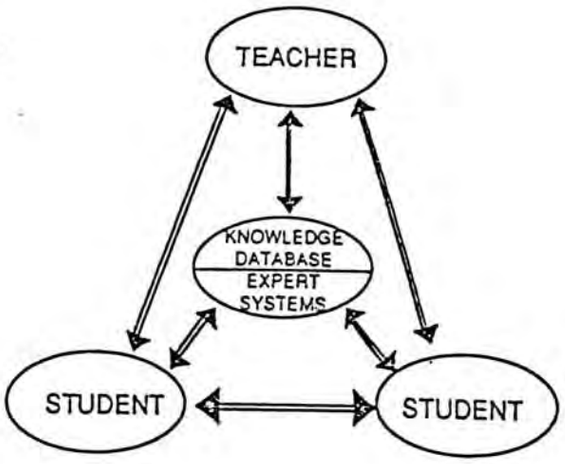
ORAL TRADITION PARADIGM (PAST)



CURRENT PARADIGM (PRESENT)

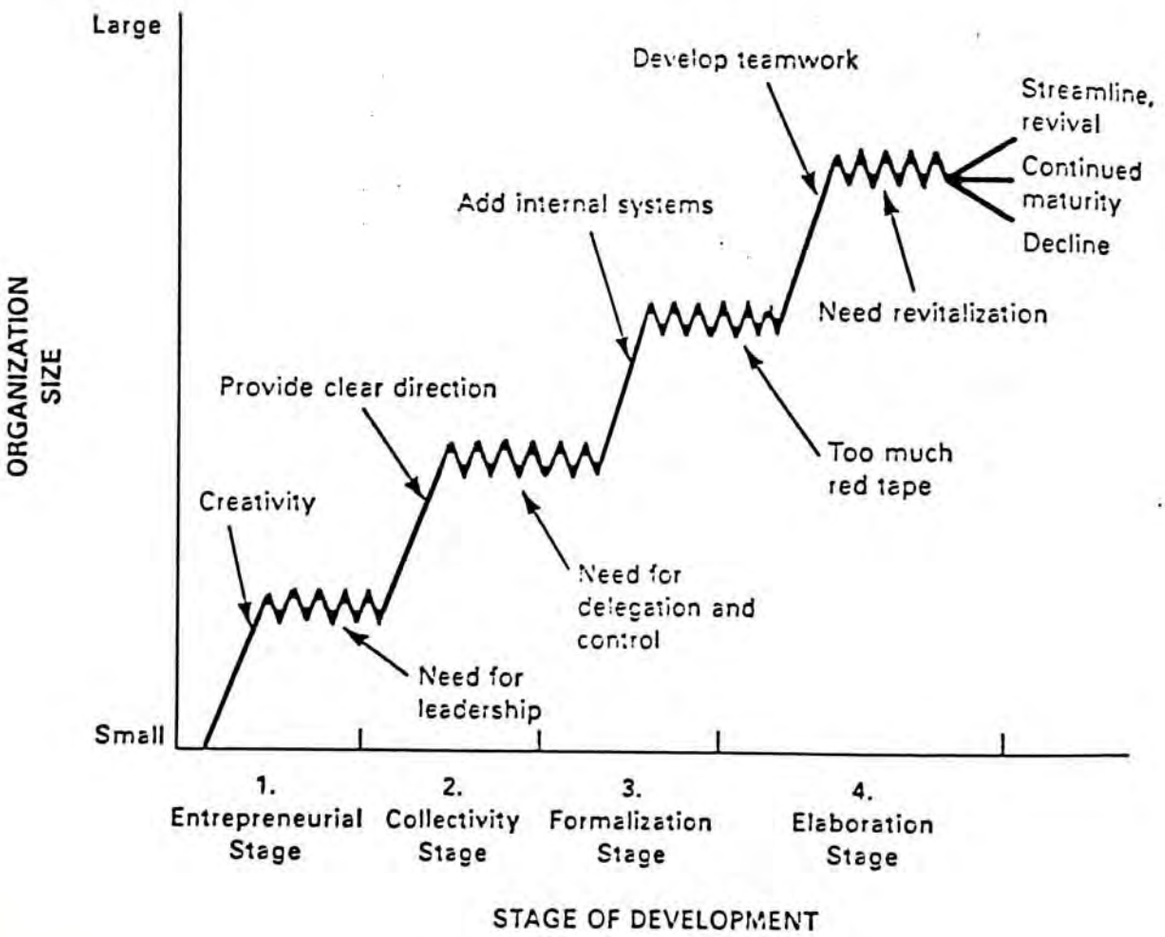


TECHNOLOGY-BASED PARADIGM (FUTURE)



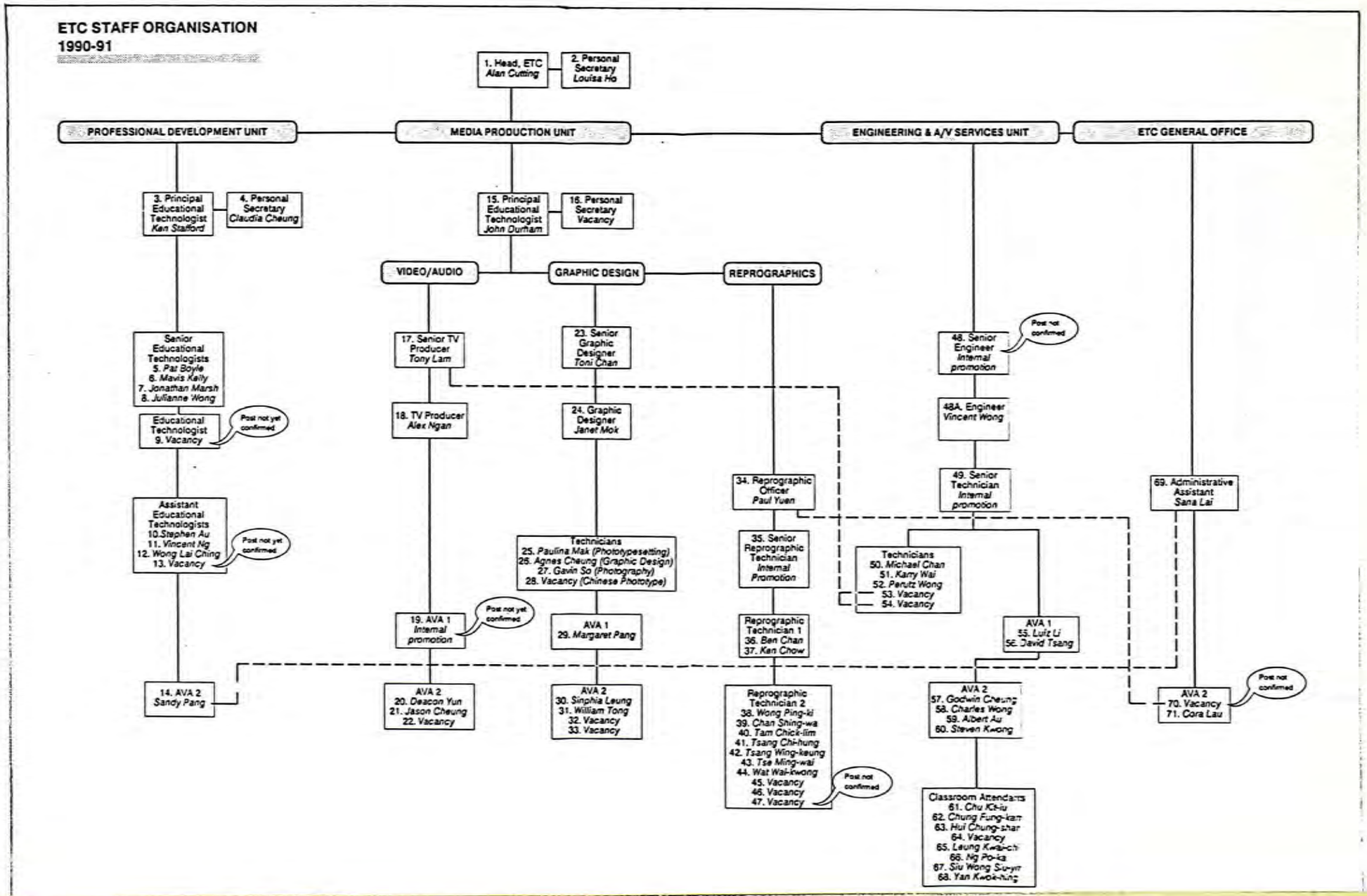
APPENDIX F : **ORGANIZATIONAL LIFE CYCLES**

(Source : Adapted from Robert E. Quinn and Kim Cameron, "Organizational Life Cycles and Some Shifting Criteria of Effectiveness: Some Preliminary Evidence," *Management* Science 29 (1983), pp. 33-51.)



APPENDIX G : ORGANIZATION CHART OF EDUCATIONAL TECHNOLOGY CENTRE OF CITY POLYTECHNIC OF HONG KONG

(Source : Educational Technology Centre, City Polytechnic of Hong Kong)



APPENDIX H : A PAGE OF THE INTRODUCTION SECTION OF THE "COST-EFFECTIVENESS" REPORT

(Name of source withheld because of confidentiality)

Chapter 1 EXECUTIVE SUMMARY

1.1 Introduction

ETC provides a range of services including professional development, instructional media, graphic design, photography, reprographic and campus AV equipment services. Each service has some laid down objectives. The resources allocated to ETC for achieving these objectives are considered to be adequate. As the Polytechnic is rapidly growing, the demand for ETC services is ever higher in terms of volume and quality. It is therefore imperative that ETC's services be provided in an efficient and cost-effective manner.

In 1990/91, total ETC staff costs amounted to $14.5 million. Compared with other UPGC institutions (except HKUST & Lingnan), CPHK has the highest unit costs per FTE and per academic staff for ETC services (excluding reprographics). The output, cost analysis, findings and recommendations on each ETC service are summarised below : -

1.2 Professional Development Unit (PDU)

1.2.1 Output and Cost Analysis

In the 17 months under review, PDU had carried the following : -

	Total Cost $M	No. of Activities	Unit Cost $
a. Workshops/Seminars	2.32	101 workshops/seminars 746 + registered no.	22,970 3,109
b. Staff Consultations	2.37	650 + consultations	3,646
c. Research	1.39	15 projects	92,666
d. Computer Assisted Instruction Projects	1.47	9 projects	ranges from $34,356 to $446,622 depending on development time
e. Teaching Resources	0.91		
f. Teaching Evaluations	0.75	123 evaluations	4,959
g. Course Planning Teams	0.58	15 panels	38,665
h. Self-development	0.21	not applicable	
i. Publications	0.17	5 articles	34,000
j. Other Activities	0.81	not applicable	
	10.96		

APPENDIX I

THE ETC'S REPORT (1991)

[CHAPTER THREE]

3 Views of the Stakeholders

3.1 What the Departments and Deans Say

During 1991, the Head of ETC arranged meetings with all Heads of Academic Departments, plus the Acting Deans, to discuss matters relating to ETC and the services it provides. All except two (English and Applied Linguistics) responded to the request. In two other instances (Electronic Engineering and Law), the Head chose not to attend himself and delegated others. The discussions were generally free-ranging, but an attempt was made to identify areas within ETC where services could be improved. Below is listed a summary of the point made. Clearly, a lot of what is referred to is not within the brief of ETC, but the points are listed here anyway.

3.1.1 Accountancy

- Very happy with ETC services generally.
- Intend to introduce staff evaluations and would like ETC's assistance.
- Want PC's to be installed in all Lecture Theatres.

3.1.2 Applied Mathematics

- Regards teaching in undergraduate courses to be of the highest importance.
- Applauds work done by ETC in helping staff with teaching problems.
- Academics must be professional in their approach to media production.
- Would like ETC to be tougher and have strong rules for graphic design work and reprographics.

3.1.3 Applied Science

- Thinks reprographics work is excellent and wants to continue this as a central service.
- Appreciate problems in Graphic Design but can offer no solution.
- Would like "even more" from ETC's Professional Development Unit.

3.1.4 Applied Social Studies

- Would like an even faster turnaround time for printing.
- Want more equipment in the department eg video editing.
- An internal departmental survey has indicated that staff in SS are very happy with ETC services generally.
- Department is very serious about teaching and the appraisal of teaching staff, and want to use ETC extensively in this area.

3.1.5 Building and Construction

- Have surveyed all staff in their department and indication is that they are very happy with ETC services.
- Appreciate difficulties in Graphic Design area, and think academic work should receive top priority.
- Thinks Professional Development activities should be more widely publicized, and should also be offered to Professional bodies outside of CPHK.
- Wants ETC to stock more items eg film.

3.1.6 Business and Management

- Extremely happy with ETC support.
- Would like the video distribution system extended to departmental seminar rooms.
- Concerned about the lighting in Lecture Theatres.
- Department has set up a committee on teaching excellence and would like ETC's help on several related matters.

3.1.7 Computer Science

- Very happy with ETC's services in the area of Staff Development but is concerned that the development of the CHVS will place extra strain on ETC's resources.
- Would like attendance at a more formal "teacher education" programme to be mandatory for all new staff.
- Would like to develop a computer version of the Language Laboratory.
- Suggested development of a computerized assessment system for large classes of students.
- Have no problems with ETC production services but would sometimes like a faster turnaround time in reprographics.

3.1.8 Economics and Finance

- Department places high emphasis on good teaching and would like CPHK to have a policy on teaching evaluation, particularly of the actual teachers rather than courses themselves.
- Would appreciate better liaison on graphic design work.

3.1.9 Electronic Engineering

- Happy with reprographic services.
- Very unhappy with Graphic Design support, and wants faster turnaround, plus facilities to produce posters.
- Department is "not interested" in teaching excellence or any sort of appraisal of teaching staff.

3.1.10 Information Systems

- Wants PC terminals in all Lecture Theatres.
- Wants to make colour transparencies from PC's.
- Has problems with large size classes, particularly for laboratory work.
- Has not given much thought to staff development in the area of teaching.

3.1.11 Law

- Very happy with media production services, but would like a high-speed copying facility for urgent jobs.
- Department already uses PDU a lot and is pleased with support given.
- Concern over the training of part-time staff and would like a revision of the manual originally produced by ETC.

3.1.12 Manufacturing Engineering

- Does not like to have to come to ETC to replay video tapes and would like ETC staff to collect and return to offices.
- Would like radio microphones in Lecture Theatres.
- Would like more assistance from PDU with specific work in the department, particularly in department of the SAIL project.
- Otherwise is happy with ETC services.

3.1.13 Public & Social Administration

- Want faster turnaround in reprographics.
- Understand problem in Graphic Design but still want a solution.
- High regard for work of PDU and would like to use more.
- Would like ETC help with courses in presentation skills for students in the department.
- Would like help with editing of research reports and publishing work generally.

3.1.14 Acting Dean, Humanities & Social Service

- No service gaps in ETC - support is far better than in Canadian Universities.
- Academics are generally not "management oriented" and can easily abuse the likes of ETC. The "system" should be regulated to present that.
- Would like to see a more unified approach to ETC service eg media/production/resource development in a single package.

3.1.15 Acting Dean, Science & Technology

- Recognizes the problems in Graphic Design but does not want ETC to sacrifice quality for quantity.

- Would like staff to know more about ETC, and encourages better liaison with departments.

3.1.16 Acting Dean, Business

- Has always been happy with ETC's services and supportive of its efforts to improve teaching.
- Expressed concerns about space in CPHK classrooms. 10-seat often need to house 12+ students.
- Would like improved liaison with departments.

3.2 What the Academic Staff Say

During July/August 1991 ETC surveyed a cross section of academic staff below HoD level. About 40% of all staff in every department were surveyed. A copy of the survey is included as Appendix A to this report.

The response rate of 25% was less than hoped for, but we believe that the results are still quite informative.

In the survey, respondents were asked to rate various aspects of ETC's operation in terms of (a) importance, and (b) quality of service. In each case a 1-4 scale was used with a representing higher importance or most excellent service and 4 of no importance or poor service. Finally, written comments were encouraged, in addition to the questions already asked.

The results of this survey are summarized in the next sections. In all cases, the percentage response is given, along with the totals in the "important/high quality" and "unimportant/needs improvement" groupings.

3.2.1 Instructional Media Production

Five questions were asked in this section.

Provision high quality graphic design work for teaching materials.

very important	21.4%	
important	28.6%	50%
of little importance	35.7%	
of no importance	14.3%	50%
excellent service	6.7%	
satisfactory service	53.3%	60%
service needs improvement	40%	
service poor	0%	40%

The need for efficient graphic design services.

very important	23.3%	
important	46.7%	70%
of little importance	23.3%	
of no importance	6.7%	30%
excellent service	16.7%	
satisfactory service	33.3%	50%
service needs improvement	44.4%	
service poor	5.6%	50%

Marketing of graphic design services to ensure academic staff awareness.

very important	14.8%	
important	51.9%	66.7%
of little importance	22.2%	
of no importance	11.1%	33.3%
excellent service	5.6%	
satisfactory service	33.3%	38.9%
service needs improvement	38.9%	
service poor	22.2%	61.1%

Printing of teaching materials

very important	64.5%	
important	29.0%	93.5%
of little importance	6.5%	
of no importance	0%	6.5%
excellent service	37.0%	
satisfactory service	37.0%	74.0%
service needs improvement	26.0%	
service poor	0%	26.0%

Production of instructional videos.

very important	10.7%	
important	57.1%	67.9%
of little importance	21.4%	
of no importance	10.7%	32.1%
excellent service	21.4%	
satisfactory service	14.3%	35.7%
service needs improvement	57.1%	
service poor	7.1%	64.3%

3.2.2

Professional Staff Development

Seven questions were asked.

The provision of professional development seminars on aspects of teaching, learning, assessments, etc.

very important	26.7%	
important	50.0%	76.7%
of little importance	13.3%	
of no importance	10.0%	23.3%
excellent service	8.7%	
satisfactory service	65.2%	73.9%
service needs improvement	21.7%	
service poor	4.3%	26.0%

Assistance with the production of instructional materials.

very important	20.0%	
important	40.0%	60.0%
of little importance	23.3%	
of no importance	16.7%	40.0%
excellent service	21.4%	
satisfactory service	42.9%	64.3%
service needs improvement	21.4%	
service poor	14.3%	35.7%

Assistance with course planning and development activities.

very important	23.3%	
important	33.3%	56.7%
of little importance	26.7%	
of no importance	16.7%	43.3%
excellent service	17.6%	
satisfactory service	47.1%	64.7%
service needs improvement	29.4%	
service poor	5.9%	35.3%

Provision of evaluation services relating to courses, modules, teaching, etc.

very important	29.0%	
important	48.4%	77.4%
of little importance	6.5%	
of no importance	16.1%	22.6%
excellent service	26.3%	
satisfactory service	47.4%	73.7%
service needs improvement	26.3%	
service poor	0%	26.3%

Provision of one-to-one advice on matters relating to teaching and/or other aspects of instructional development.

very important	24.1%	
important	41.4%	65.5%
of little importance	17.2%	
of no importance	17.2%	34.4%
excellent service	31.3%	
satisfactory service	43.8%	75.1%
service needs improvement	18.6%	
service poor	6.3%	24.9%

Provision of resource materials to assist aspects of teaching (eg manuals, guides, audio-visual materials).

very important	16.7%	
important	60.0%	76.7%
of little importance	13.3%	
of no importance	10.0%	23.3%
excellent service	11.1%	
satisfactory service	44.4%	55.5%
service needs improvement	38.9%	
service poor	5.6%	44.5%

Assistance and advice with the development of computer mediated/computer assisted instruction (eg software development).

very important	17.9%	
important	53.6%	71.5%
of little importance	21.4%	
of no importance	7.1%	28.5%
excellent service	0.0%	
satisfactory service	60.0%	60.0%
service needs improvement	30.0%	
service poor	10.0%	40.0%

3.2.3 Classroom and Technical Services

Seven questions were asked.

Setting up audio-visual equipment in classrooms.

very important	69.0%	
important	31.0%	100.%
of little importance	0%	
of no importance	0%	0%
excellent service	14.3%	
satisfactory service	57.1%	71.4%
service needs improvement	21.4%	
service poor	7.1%	28.6%

Assistance with emergencies whilst teaching.

very important	55.2%	
important	41.4%	96.6%
of little importance	0%	
of no importance	3.4%	3.4%
excellent service	10.0%	
satisfactory service	50.0%	60.0%
service needs improvement	25.0%	
service poor	15.0%	40.0%

Replaying of video tapes to a class.

very important	28.6%	
important	57.1%	85.7%
of little importance	10.7%	
of no importance	3.6%	14.3%
excellent service	28.6%	
satisfactory service	52.4%	81.0%
service needs improvement	19.0%	
service poor	0%	19.0%

Supplying equipment from the central loan pool.

very important	51.7%	
important	37.9%	89.7%
of little importance	10.3%	
of no importance	0%	10.3%
excellent service	25.9%	
satisfactory service	55.6%	81.5%
service needs improvement	14.8%	
service poor.	3.7%	28.5%

Repair of departmental audio-visual equipment.

very important	29.2%	
important	58.3%	87.5%
of little importance	12.5%	
of no importance	0%	12.5%
excellent service	20.0%	
satisfactory service	50.0%	70.0%
service needs improvement	30.0%	
service poor	0%	30.0%

Provision of advice concerning models/brands of audio-visual equipment.

very important	20.0%	
important	40.0%	60.0%
of little importance	28.0%	
of no importance	12.0%	40.0%
excellent service	21.4%	
satisfactory service	28.6%	50.0%
service needs improvement	35.7%	
service poor	14.3%	50.0%

Provision of state-of-the-art teaching equipment in lecture theatres and classrooms.

very important	29.6%	
important	51.9%	81.5%
of little important	14.8%	
of no important	3.7%	18.5%
excellent service	18.8%	
satisfactory service	50.0%	68.8%
service needs improvement	18.8%	
service poor	12.5%	31.2%

3.3 Academic Staff Comments in Survey

Staff were invited to contribute written comments in additional to answers to the questions.

3.3.1 The written comments provided by the respondents suggest a polarization of views relating to the overall importance and effectiveness of existing ETC services. Staff tended to be either generally positive or generally negative towards ETC services, suggesting an underlying attitude state, rather than a view based on clear understanding of the services provided and experience of these services.

3.3.2 Staff who were generally positive considered most of the listed services (across all three clusters of services) to be important and their levels of satisfaction to be high. Several of the classroom services, professional development seminars and evaluation services, and the instructional media production services were all praised highly by these staff. On the negative side, small numbers of staff were unhappy with a range of aspects, including: the lack of coordination between the Computer Centre and the ETC; the amount of lead time required for production services (caused by over-bureaucratic processing); and lack of specific relevance of professional development seminars and other activities.

3.3.3 In general ETC staff were considered to be very helpful and approachable, although a small number of staff were critical of the attitude of some "senior staff".

3.3.4 The comments below are edited from those submitted. They have been grouped according to the activity/topic being commented on.

Instructional Media Production

- excellent
- I haven't required assistance of the ETC but I think they are important.
- I found the video/audio production section very useful. We were talking to your staff in that section recently, they were able to advise us on the pros and cons of making a teaching video , and give us realistic estimates in terms of time and money. Thank You.
- Beyond instructional materials ETC has an important role in assisting departmental materials - conference publicity materials, departmental handbook; student handbooks and so forth. I have been partiuclarly impressed with the quality of work and commitment shown by ETC staff in relation to such publications.
- Can printing of teaching materials be done with a shorter lead time? Would be most helpful!
- 7-day notice of printing copies is too long.
- It is very inconvenient to use the services of the graphic design and video production services

Professional Development

- In general I think the professional development seminars provided by ETC are excellent. I have used these extensively and wish that the PDU was used more often by staff.
- I am particularly impressed by the advice and service given to teaching evaluation.

- Whilst I was aware of production services and classroom services, it took nearly 9 months before I discovered the evaluation profile of ETC. I shall, however, make an effort to use them - I would be glad to see instruments suitable for use with small groups, rather than the large group evaluation of TEIP.

- Personally I find manuals/guides are more useful in the sense that if we have them on hand. They can be reached whenever they are needed!

- More useful variety of video tapes are required. The topics should be suggestions from lecturers.

- Perhaps your group could critique your/each other presentations for staff development before presentation or provide ways of getting feedback. Feedback should be encourged - the teaching staff seem eager, helpful, positive and could be an excellent source.

- Too many teaching sessions were cancelled instead of rescheduled. I would encourage you to increase the teaching training in all aspects of what ETC can offer.

- Professional development seminars are too general, cannot satisfy the specfic needs of the individual departments, in particular the engineering departments. It would be better to show specific examples of successful stories or case studies during the seminars.

- Some professional development activities conducted by ETC are too superficial and not useful to academic departments. These functions should be largely left to the academic departments who know their own needs best.

Classroom Services

- excellent
- Sevices are generally satisfactory.
- I understand the difficulties in having to set up equipment simultaneously in a number of different classrooms, but waiting for equipment to arrive after a class has begun (particularly for a single lesson) can disrupt the lesson substantially. Likewise waiting for it to be collected can take a while.
- too often the easiet answer seems to be "it can't be done" rather than figuring how it might be done
- I have had difficulty in using computer displays in lecture and I have been unable to do it. I would like to be able to come to a lecture and use my PowerPoint slides directly for my floppy disc. I cannot do this. As a fallback I am happy to carry a portable PC and plug it in but I can't do this as the portables 'given' to the Poly are incompatible with equipment.
- Services have been poor, especially in the area of computer interface and this problem has been around for over four years! A simple thing such as providing a cable to interface with a PC cannot be provided.
- Problems of non compatability of TV Projector/utilities with computers supplied by CS.
- Poor video system. It is not possible to rewind a video tape efficiently from the lecture theatre.
- The distance bewteen classrooms and the control ETC counter makes it difficult to communicate where equipment breaks down.

- Absolutely poor emergency repair service for the lecture theatre whilst teaching (eg no repair service when a projector is blown and lecture has to be cancelled.)

- Two screens for simultaneous projection of transparencies could be very helpful in the lecture theatres.

- It is better to have an equipment loan pool in each department.

ETC Services - efficiency

- The ETC is too slow in response to the needs of the staff concerned.

- Procedures are bureauratic and inflexible. All requests which are forwarded with memos are often not worked out properly.

- The ETC should improve its efficiency in rendering sevices. Delays should be cut.

ETC Staff

- I have always found the counter staff to be very helpful.

- The attitude of some senior staff is poor, unhelpful and not considerate.

- As a newcomer (Sept 90) to CPHK and to teaching I could hardly fail to be impressed. Overall I have found staff to be very approachable, and helpful.

- On the whole, however, services have been friendly, mostly efficient, and a pleasure after experiences in other institutions outside HK. Thank You.

Others

- One area of improvement would be co-ordination/ integration with Computer Center for training in PC applications.

- The priorities must be to improve and aid teaching competence. This has a technical and educational aspect. Perhaps a better name for ETC would be "Teaching and Professional Development Services." ETC implies only setting up equipment.

- Surveys like this once per year or two years will be useful. Please use smaller print to save paper.

- The ETC should economize on printing of newsletter and reports. Use cheaper paper & less elaborate designs.

- Some strategy/advice as to how the polytechnic as a whole can do/act to reduce the amount of papers (a lot of them needlessly) being circulated /genrated/printed/wasted!

- Newsbulletins published by ETC are too costly and contents not relevant.

- I do not know whether ETC can help with this: sometimes I found the division of responsibity defeats the objective of providing assistance in teaching, eg Setting up a computer in the lecture theatre, ETC is in charge of the video output, CC is in charge of the computer, nobody is in charge of the cable in between, hence the show cannot be put on. Videotaping a guest speech, ETC is in charge of the video camera, FO is in charge of the video tapes, if the lecturer is not informed, then the speech cannt be taped. Some king of co-ordination between departments is needed.

- The division of responsibility bewteen the ETC and the CC for computer display equipment is unsatisfactory. It is simply too hard to try to use anything more than overhead slides & video in a lecture.

- It seems ETC is trying to move in the

direction of computer-supported environment but the management is not.

- The ETC should limit its services to those that are regarded as most important ie most needed by academic staff.

- The ETC should respond more sensitively to staff input.

- It seems the priorites of ETC should be to provide facilites and equipment for teaching staff to use in the least cumbersome and convenient way.

- Although state-of-the-art teaching equipment is important, we may have reached a point of deminishing return on our investment. Instead of purchasing new equipment we should teach our staff how to use the existing equipment wisely.

APPENDIX J

EVALUATION OF ETC SERVICES
SURVEY OF ACADEMIC STAFF OPINIONS

Evaluation of ETC Services

SURVEY OF ACADEMIC STAFF OPINIONS

Currently the Educational Technology Centre (ETC) provides a number of services to support academic staff, particularly in relation to their teaching function.

We are currently undertaking a review of the priorities and foci of the ETC. To assist this review, we wish to obtain the views of academic staff concerning the services we provide. Of particular value are your views of the **IMPORTANCE** of the services that the ETC currently provides and your **SATISFACTION** with those services that you have utilised.

We would appreciate you taking the time to complete the attached short questionnaire.

If you require clarification of any aspect of the questionnaire please do not hesitate to call either *Alan Cutting (Ext. 8211)* or *Pat Boyle (Ext. 8202)*.

Note: *When indicating your level of "satisfaction" with services please restrict your considerations to services that you have used in the last 12 months.*

Please return your completed questionnaire to Miss Tracy Lo, ETC as soon as possible.

QUESTIONNAIRE

Section A

Listed below are the major services provided by the ETC. These services are clustered under 3 major headings - Instructional Media Production, Professional Development and Classroom Services.

Please provide **two (2) ratings** for each service.

In the first box please rate the ***IMPORTANCE***, in your view, of having such a service provided for academic staff in the CPHK.

Use the following rating scale for rating "IMPORTANCE".

1. *Very Important*
2. *Important*
3. *Of Little Importance*
4. *Of No Importance*

In the second box please provide a rating of YOUR ***"SATISFACTION"*** with the service, if you have used the service.

Use the following rating scale to indicate your level of "SATISFACTION" with the services.

1. *Excellent Service*
2. *Satisfactory Service*
3. *Service Requires Some Improvement*
4. *Service was Poor*

If you wish to make specific comments about any of the services listed please write them in the space provided under each cluster.

ETC SERVICES

		Importance	Satisfaction
1.	**Instructional Media Production**		
1.1	Provision of high quality graphic design work for teaching materials	☐	☐
1.2	Efficient graphic design services (including production)	☐	☐
1.3	Marketing of graphics services to ensure academic staff awareness	☐	☐
1.4	Printing of teaching materials	☐	☐
1.5	Production of instructional videos	☐	☐

Comments:

2.	**Professional Development**		
2.1	Professional development seminars on aspects of teaching, learning, assessment, etc.	☐	☐
2.2	Assistance with production of instructional materials	☐	☐
2.3	Assistance with course planning and development activities	☐	☐
2.4	Provision of evaluation services, relating to courses, modules, teaching,etc.	☐	☐
2.5	Provision of one-to-one advice on matters relating to teaching and/or other aspects of instructional development	☐	☐
2.6	Provision of resource materials to assist aspects of teaching (e.g. manuals, guides, audio-visual materials)	☐	☐

		Importance	Satisfaction
2.7	Assistance and advice with the development of computer mediated/computer assisted instruction (e.g. software development)	☐	☐

Comments:

3. Classroom Services

3.1	Set up of equipment in classrooms	☐	☐
3.2	Assistance with emergencies whilst teaching	☐	☐
3.3	Replaying of video tapes to a class	☐	☐
3.4	Supply of equipment from the central loan pool	☐	☐
3.5	Repair of departmental audio-visual equipment	☐	☐
3.6	Provision of advice concerning models/ brands of audio-visual equipment	☐	☐
3.7	Provision of state-of-the-art teaching equipment in lecture theatres and classrooms	☐	☐

Comments:

Section B

In the spaces provided below please make any comments you wish to about:

(a) The services that are identified in this survey or any other ETC services that you have used.

(b) Any other matters relating to the operation and priorities of the ETC.

Thank you for your Assistance

APPENDIX K

ETC QUESTIONNAIRE FOR USERS

Education Technology Centre (ETC)
Questionnaire for Users

December, 1991

Department: Title:(AL,L, etc.) Years at CPHK:

Please answer the following questions as carefully as you can. Your questionnaire will not be personally identified to you.

Part I

Please indicate whether you have used the following services of ETC's *Instructional Media Unit*. If you have not used it, place a 0 [zero] in Columns 1 and 2; if you have used the service, put the approximate number of times you have used it in the correct columns. Column 3 asks you to rate the usefulness of service. Column 4 asks you to rate its cost effectiveness (if you do not know, simply leave it blank). Please rate each of these attributes from 10 (very useful; very cost effective) to 0 (not useful; not cost effective).

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Usefulness (0 - 10)	Cost Effectiveness (0 - 10)
(a) Graphics:				
(i) Class Material (Lecture Notes, Overheads, Pamphlets, etc.)	_____	_____	_____	_____
(ii) Personal (Name Cards, Stationery, etc.)	_____	_____	_____	_____
(iii) Other (Illustrations, Laminations, etc.)	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Time to Complete Service Unsatisfactory for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain]_____

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Usefulness (0 - 10)	Cost Effectiveness (0 - 10)
(b) Photography:				
(i) Prints for Publications	_____	_____	_____	_____
(ii) Publicity Photos	_____	_____	_____	_____
(iii) Other (Microfilm, 35 mm. Slides, etc.)	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Time to Complete Service Unsatisfactory for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

(c) Reprographics:	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Usefulness (0 - 10)	Cost Effectiveness (0 - 10)
(i) Colour Separations	_____	_____	_____	_____
(ii) Printing	_____	_____	_____	_____
(iii) Other (High Volume Photocopying, Embossing, etc.)	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Time to Complete Service Unsatisfactory for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

(d) Video/Audio:	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Usefulness (0 - 10)	Cost Effectiveness (0 - 10)
(i) Broadcast Quality Videos	_____	_____	_____	_____
(ii) Sound Recordings, etc.	_____	_____	_____	_____
(iii) Others (Animated Graphics, Dual Language Sound Tracks, etc.)	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Time to Complete Service Unsatisfactory for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

General Comments (please feel free to expand on any points made above)

Part II

Please indicate whether you have used the following services of ETC's *Professional Development Unit.* If you have not used a particular service, place a 0 [zero] in Columns 1 and 2; if you have used the service, put the approximate number of times you have used it in the correct column. Column 3 asks you to rate the effectiveness of the service and Column 4 asks you to rate how user friendly your interaction with ETC was on the particular service. Please rate each of these attributes from 10 (very effective; very user friendly) to 0 (not effective; not user friendly).

(a) Short Courses and Workshops:	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)	User Friendly (0 -10)
(i) Course design, development and evaluation				
(ii) Assessement and evaluation of student learning				
(iii) Evaluation and development of teaching				
(iv) Teaching strategies				
(v) Media in teaching and learning				
(vi) Computer mediated instruction				
(vii) Research and publication				

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Too Time Consuming
(iii) ☐ Unnecessary Given Personal Experience
(iv) ☐ Equivalent Service Available within CPHK

(b) Individual Consultation with an ETC staff member: ☐ Yes ☐ No

Please list subjects of consultation	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)	User Friendly (0 -10)
_____				
_____				
_____				
_____				
_____				

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Too Time Consuming
(iii) ☐ Unnecessary Given Past Personal Experience
(iv) ☐ Equivalent Service Available within CPHK

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness 0 - 10)	User Friendly (0 -10)
(c) Special purpose meetings	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Too Time Consuming
(iii) ☐ Unnecessary Given Past Personal Experience
(iv) ☐ Equivalent Service Available within CPHK

(d) Had an ETC Member Participate with You in a Course Planning Team [CPT]? ☐ Yes ☐ No

List courses	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)	User Friendly (0 -10)
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

If you have never used any of the above, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Service
(ii) ☐ Too Time Consuming
(iii) ☐ Unnecessary Given Past Personal Experience
(iv) ☐ Equivalent Service Available within CPHK

Suppose ETC were not a "free resource" to your department, would you be willing to have your department charged for its services in the same manner as it now pays for CPHK's staff development courses?

(i) ☐ Yes
(ii) ☐ No

General Comments (please feel free to expand on any points made above)

_____

_____

_____

_____

_____

Part III

Please indicate whether you have used the following services of ETC's *Classroom and Technical Services*. If you have not used the service, place a 0 [zero] in Columns 1 and 2; if you have used the service, put the approximate number of times you have used them. Column 3 asks you to rate the effectiveness of the service. Please rate each of these attributes from 10 (very effective) to 0 (not effective).

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)
(a) ETC Technicians, Audio Visual Assistants (e.g. to set up and repair equipment)	_____	_____	_____

If you have never used this service, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Services
(ii) ☐ Not Available at Correct Time for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)
(b) Classroom Attendants (e.g. to make sure overhead projector is working and AV equipment in place)	_____	_____	_____

If you have never used this service, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Services
(ii) ☐ Not Available at Correct Time for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)
(c) Language/Simultaneous Interpretation Laboratories	_____	_____	_____

If you have never used this service, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Services
(ii) ☐ Not Available at Correct Time for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)
(d) Video Labs	_____	_____	_____

If you have never used this service, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Services
(ii) ☐ Not Available at Correct Time for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

	No. of Times Used (1.9.90 - 31.8.91)	No. of Times Used (after 1.9.91)	Effectiveness (0 - 10)
(e) Equipment (Overheads, Video Cameras, etc.) Loan Pool	_____	_____	_____

If you have never used the equipment loan pool, please check the closest explanation for not employing it:

(i) ☐ Unfamiliar with ETC Services
(ii) ☐ Not Available at Correct Time for my Need
(iii) ☐ Service Not Necessary in my Opinion
(iv) ☐ Other [Please Explain] _____

General Comments (please feel free to expand on any points made above)

_____

_____

_____

_____

Part IV

Please write any general comments you would care to make about ETC. Include any educational or staff development services which are not now available but which you would like to be provided. (Use additional sheets if necessary.)

_____

_____

_____

_____

_____

_____

_____

Table 1: CENTRES OF ACTIVITY IN INSTRUCTIONAL TECHNOLOGY

(Source: International Yearbook of Educational and Training Technology, 1989)

CENTRES IN THE UNITED STATES OF AMERICA		
Universities/higher education institutions	121	
Other research/development/use centres	109	230
INTERNATIONAL/REGIONAL CENTRES		
International agencies, organization, etc.	34	
Regional multinational organizations, etc.	51	85
CENTRES IN THE UNITED KINGDOM		
Universities/higher education institutions	90	
Other research/development/use centres	150	240
CENTRES IN THE REST OF THE WORLD (by region)		
Europe (not including UK)	210	
Asia/Australasia	189	
Latin America and Caribbean	90	
Africa	64	
Canada	41	
Middle East	17	611
TOTAL NUMBER		1166

Table 2: Views of Head of Faculty on ETC's Overall Services

FACULTY	POSITIVE	NEUTURAL	NEGATIVE
Humanities & Social Service	No service gaps in ETC - support is far better than in Canadian Universities.	---	Would like to see a more unified approach to ETC service e.g. media/production/ resource development in a single package.
Science & Technology	---	Recongnizes the problems in Graphic Design but does not want ETC to sacrifice quality for quantity. Would like staff to know more about ETC, and encourages better liaison with departments.	---
Business	Has always been happy with ETC's services and supportive of its efforts to improve teaching.	---	Would like improved liaison with departments.

Table 3A Survey Results of Views of Academic Staff on ETC's Services

-- Instructional Media Production Unit

	Importance (%)		Quality of Service (%)	
Survey Question	Important	Not Important	Satisfactory	Not Satisfactory
Printing of teaching materials.	93.5%	6.5%	74%	26%
The need for efficient graphic design services.	70%	30%	50%	50%
Production of instructional videos.	67.9%	32.1%	35.7%	64.3%
Marketing of graphic design services to ensure academic staff awareness.	66.7%	33.3%	38.9%	61.1%
Provision of high quality graphic design work for teaching materials.	50%	50%	60%	40%
Mean Score	69.62%	30.38%	51.72%	48.28%

Table 3B: Survey Results of Views of Academic Staff on ETC's Services

-- Classroom and Technical Services Unit

	Importance (%)		Quality of Service (%)	
Survey Question	Important	Not Important	Satisfactory	Not Satisfactory
Setting up audio-visual equipment in classroom.	100%	0%	71.4%	28.6%
Assistance with emergencies whilst teaching.	96.6%	3.4%	60%	40%
Supplying equipment from the central loan pool.	89.7%	10.3%	81.5%	18.5%
Repair of departmental audio-visual equipment.	87.5%	12.5%	70%	30%
Replaying of video tapes to a class.	85.7%	14.3%	81%	19%
Provision of state-of-the-art teachnig equipment in lecture theatres and classroom.	81.5%	18.5%	68.8%	31.2%
Provision of advice concerning models/brands of audio-visual equipment.	60%	40%	50%	50%
Mean Score	85.86%	14.14%	68.96%	31.04%

Table 3C: Survey Results of Views of Academic Staff on ETC's Services

-- Professional Staff Development Unit

	Importance (%)		Quality of Service (%)	
Survey Question	Important	Not Important	Satisfactory	Not Satisfactory
Provision of evaluation services relating to courses, modules, teaching, etc.	77.4%	22.6%	73.7%	26.3%
Provision of resource materials to assist aspects of teaching (eg manual, guides, audio-visual materials).	76.7%	23.3%	55.5%	44.5%
The provision of professional development seminars on aspects of teaching, learning, assessments, etc.	76.7%	23.3%	73.9%	26.1%
Assistance and advice with the development of computer mediated/computer assisted instruction (eg software development).	71.5%	28.5%	60%	40%
Provision of one-to-one advice on matters relating to teaching and/or other aspects of instructional development.	65.5%	34.4%	75.1%	24.9%
Assistance with the production of instructional materials.	60%	40%	64.3%	35.7%
Assistance with course planning and development activities.	56.7%	43.3%	64.7%	35.3%
Mean Score	69.2%	30.8%	66.7%	33.3%

Table 4: Summaries of Executive Findings

UNITS	FINDINGS
Professional Development Unit	1. Since there's no similar service in the market, PDU is no commercial value. The cost effectiveness can only judged by users in CPHK. 2. Though 5.8 million/year used to hire a large number of senior staff in PDU, the usage of the service is very low. 3. 20-30% of time used to handle consultations on teaching methodology, reflects the demand for PDU service. If it is better well-structured it will more cost-effective. 4. Duplications of service found in the departmental activities in CPHK cause PDU not cost-effective. 5. No PD service provided for many part-time lecturers. 6. No training courses for new staff especially those have no previous tertiary teaching experience. 7. High cost Computer Assisted Instruction Projects applied to limited academic disciplines only, and found not very useful in teaching. 8. No management control on CAI projects. It takes long time but usage limited.
Instruction Media Production Unit (A) Video/Audio Production Section	1. The utilisation rate is extremely low although video/audio equipment are advance & expensive. 2. Demand for video production from the academic departments is low, only 2 production are for teaching from 1.7.90 to 20.11.91. 3. Many outside practice activities, using substantial ETC equipment and staff support in this unit. 4. Space is under-utilised eg. The Acoustic Lab, which never been used & The Video Viewing room used only when there are visitors. 5. The utilisation rate for AV equipment is low, as there are no AV equipment utilisation records.
(B) Graphic Design Section	1. It is not a cost-effective service because the output is low & lead time is long. 2. Lack of management control on the time for each design & no guidelines on design standards. 3. Departments are not cost conscious of the design work both on the staff time & the "subsequent charge".

(C) Reprographic Section	1. A cost-effective service. 2. There is high fluctuation of job requests and many urgent jobs. 3. Offset machines are under-utilised due to shortage of labour & change of printing mode from offset printing to photocopying. 4. Delays in graphic design work cause much disruption to the printing schedule. 5. Low staff morale as the promotion prospect of RT IIs is limited.
(D) Photography Section	1. Straight forward photo-taking or film/slide processing jobs cause low commercial value of Photography Team. 2. Many photos for publication have to be taken by outside photographers. Many photos taken yet cannot be selected. 3. The dark room for black-and-white photo-processing are under-utilised due to low demand. 4. Since processing of colour films is done by outside company, jobs through ETC only caused unnecessary administrative work & delay.
Classroom and Technical Services Unit	1. No proper record for workshop service, so that jobs handled cannot be independently verified, also, no formal procedure for requesting, so that jobs cannot checked authorised or not. 2. The utilisation rate for the Simultaneous Interpretation Lab is low. 3. Expensive equipment in the loan pool can borrowed by staff & students but not known for personal use or for Polytechnic activities.

TABLE 5: STAFFING AND SERVICES OF THE COMPUTER CENTRE OF CPHK, 1987-1991

(Source: Computer Centre, CPHK)

Date	Staff Number			Service Areas
	Total	Professional	Technical/Clerical	
12/87	43	27	16	5 (Academic Services Section, Administrative Data Processing Section, Systems Support Section, Operation Section, General Administrative and Support Section.)
9/90	100	47	53	8 (In addition to the 5 sections abovementioned, 3 more sections were add: Special Technical Services Section, Information Services Group, and Network Support Section.)
10/91	90	52	38	8 (Same as above)
4/92	82	45	37	8 (Same as above)

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